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ABSTRACT

As part of the requirements for an exploratory graduate course on computers offered by the Department of Library Science for school librarians and other interested persons, students developed course projects relating what they learned to possible applications in school and/or library settings. This resource booklet contains unedited selected materials from those course projects. Contents include: "Proposal for a Planned Course in Computer Literacy for a Middle School," "Applications Design for 'Using References in the Library: A History Lesson,'" "Design for Micro-computer Inventory of Media-AV Equipment in a Junior High School," "Application Design for an Online Search Assistance Program for Junior High Students Using a Local Data Base," "A Mock Proposal for Incorporating OCLC Services in a Local School District Library," "Teacher's Resource List of Supplementary Materials for Courses Using Micro-computers," "Review of Junior High School Books and Materials on Computers," "Bibliography of Children's Books on Computers," and "Reading Software." (MER)

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SCHOOLS, COMPUTERS, AND LIBRARIES:

SELECTED RESOURCES FROM COURSE PROJECTS DEVELOPED BY STUDENTS IN L.S. 8064-90, VILLANOVA UNIVERSITY

FALL TERM, 1980

Compiled by:

Richard R. Brickley, Director

Research and Information Services for Education

IR009226

There is only one condition in which we can imagine managers not needing subordinates, and masters not needing slaves. This condition would be that each (inanimate) instrument could do its own work, at the word of command or by intelligent anticipation, like the statues of Daedalus or the tripods made by Hephaestus, of which Homer relates that "Of their own motion they entered the conclave of Gods of Olympus" as if a shuttle should weave of itself, and a plectrum should do its own harp playing.

Aristotle
The Politics, ca. 350B.C.

FEB 16 1981

INTRODUCTION

In the fall of 1980, an exploratory graduate course on computers (especially micro-computers) was offered to school librarians and other interested persons by the Department of Library Science at Villanova University. As part of the course requirements, students were to develop a course project relating their learnings to possible applications in school and/or library settings. This resource booklet contains selected materials from those course projects and is published as a means of sharing these resources with interested persons, with the permission of the students.

The materials included are unedited; furthermore, prices quoted for commercial materials are estimates and subject to change. No endorsement of any commercial product is intended and the information contained herein does not necessarily reflect the views or position of either Villanova University or R.I.S.E.

Richard R. Brickley
January, 1981

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*While only some of the course projects of these students were appropriate for inclusion in this resource booklet, all students are listed to reflect the collective effort evidenced in the sharing among students which characterized the course.

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(A) Proposal for a Planned Course in Computer Literacy for a Middle School

Statement of Purpose

It has become impossible to ignore the impact of computers on our lives. For all but the reclusive hermit in his cave or the monk in a remote abbey, contact with computers has become a daily fact of life. The average adult is becoming increasingly aware of computers as he banks, shops or purchases an airplane ticket for his vacation, and he may very well feel awe and some anxiety about this new, mysterious force that has appeared to intrude itself upon his life. He does not understand the phenomenon and, not understanding, may well mistrust and fear it. This is an informational gap of national proportions.

In order to reach and enlighten the average American adult about computers, educational television programs could provide one solution; night classes could be offered; books and magazine articles could be published aimed at this audience. All of this could and should be done. However, the likelihood is that, with all of this available, it is only the minority of the population that would avail itself of the opportunity to obtain information about this vital subject. For reason of inertia, lack of time or a sense of intimidation by the topic itself, many would, by default, opt to retain their ignorance and anxiety.

Children are notably more receptive to change than their parents. Unlike adults who are accustomed to having control over their own environments, children are required to adapt to the changes imposed upon them. In view of this, it is not surprising, therefore, that they are commonly quite receptive to new ideas, new approaches, new ways of looking at the world. For this reason and because it is the young who most need an understanding of computers to prepare them for the evr more computerized world

in which they will be living, it is the school children to whom we must address ourselves. The children need to know and they are ready to learn. It is our obligation as educators to meet this need.

The concept of computer courses at the high school level has been with us for some time, it should be noted.. However, these classes are most often offered as electives and frequently are limited to a select group, such as those students who are mathematically gifted. It is time to reevaluate the content of these course offerings and to broaden their enrollment to the entire student body.

It is also the time to extend computer education to the lower grades to reach children in the elementary, middle and junior high schools. In some areas of the country this concept has been or is now being put into effect, but the number is still far too limited.

In a school district undertaking to develop a curriculum on computers, the plan should provide for the introduction of the computer concept in the elementary school, computer literacy in greater depth in the middle school or junior high, and further study with more technical training for high school students. In broad outline, of such a district-wide curriculum, at the first level, the student can be made aware of computers, their components and basic functions. At the next level, the student can learn the mechanism in greater detail, the applications and options offered by computers as well as their impact on our society. At the third level, the student can update his knowledge of the aforementioned to include advances in the field since his earlier training, learn simple programming and go on to explore career opportunities available to him. (Needless to say, the field is wide open to women as well as men, and the masculine pronoun is a matter of convenience.)

In the Radnor Township School District where I am employed as a librarian, there has, for some time, been a computer class offered at the high school, but there have been no units of study on computers below that level. While I would like to see in the near future the formulation of a district-wide computer curriculum in our school system, I am limiting my focus at this time to a course in computer literacy for the Middle School, which is my base of operations. I have prepared a proposal for such a class which I plan to submit to my principal for her consideration with the hope that it will be accepted and implemented during the next school year.

Two of our mathematics teachers at the Radnor Middle School have taken courses or workshops in the field of computers. Both have expressed an interest in the implementation of a class in computer literacy and would be available to teach such a course were it made a part of our curriculum.

Should, at a future date, a decision be made to broaden the scope of computer education in our schools to K-12, it is understood that the content of the Middle School course (assuming the proposal is adopted) would be modified appropriately to conform to the overall plan. At that time, with an administrative and school board commitment to such a curriculum, no doubt investment would be made in hardware for the Middle School and, hopefully, for the elementary schools as well. This, too, would obviously affect the emphasis of the course.

In any event, it is my hope that this proposal for a course in computer literacy serves as a stimulus to the educational process and that, in Radnor, as elsewhere, we move toward an era in which we all understand and, understanding, make the best use of the computers that are a part of all of our lives.

Objectives by Students

1. Familiarity with the concept of computers and their operation.

2. Familiarity with computer terminology.

3. Awareness of the historical development of the computer.

4. Knowledge of the practical applications of computers.

5. Awareness of the social implications of electronic data processing.

6. Knowledge of the processes involved in simple programming.

7. Capability to develop criteria for the evaluation and comparison of marketed brands of micro-computers.

8. Awareness of career opportunities in the field of electronic data processing.

Expected Levels of Achievement of Stated Goals

1. Ability to define a computer, to identify its major components and to describe the basic operation of a computer system.

2. Ability to match with their definitions a list of 25 terms relevant to the computer.

3. Ability to draw and label a simple time-line that traces the history of the development of the computer.

4. Ability to list 10 common computer applications and to propose at least one original application.

5. Ability to describe 3 positive, 3 negative social consequences of the computer revolution and to identify 3 mechanisms for control.

6. Ability to prepare a flowchart for a simple activity and to define the steps in simple programming of a micro-computer.

7. Ability to prepare a comparative chart for the hypothetical purchase of a micro-computer.

8. Ability to list and describe 5 career possibilities in the computer field.

Outline for a Planned Course (or Unit) on Computer Literacy for Radnor Middle School

I Introduction
- -Definition of a computer.
- -Computer applications encountered in students' daily lives.
- -Capabilities and advantages of computers.
- -Limitations of computers.

II Operation of a computer.
- -Basic components and their functions.
- -Relationship of the components.
- -Basic operation of a computer system.
- -Input and output devices.
- -Computer vocabulary.

III Hands on experience with a computer
- -Visit from group of high school students with hardware, if feasible.
- -Visit from representative from Burroughs with hardware.
- -Field trip to Computer World in Paoli.
- -Observation of key punch operation in the school district's payroll department.

IV Historical background of computer development
- -Origins: finger counting, beads, abacus.
- -Binary code. Work of Pascal, Leibnitz, Babbage etc.
- -ENIAC, University of Pennsylvania.
- -Computer "generations."

V Computers in our world
- -Applications.
- -Rapid expansion of use.

-Impact on our society. Technology and social responsibility.
-Evaluation of potential of computers for both good and evil. Right to privacy. Computer theft.
-Responsibility and obligations. Mechanisms for control.

VI Programming a micro-computer
-Computer languages: BASIC, FORTRAN, COBOL etc. Specialized applications.
-Flowchart or algorithm.
-Simple programming.

VII Software
-Availability of packaged programs.
-Classroom utilization.
-Home use.

VIII Criteria for selecting a micro-computer
-Development of a list of criteria.
-Creation of a rating chart.
-Hypothetical purchase of a micro-computer.

IX Career opportunities in electronic data processing: engineers, mathematicians, physicists, systems analysts, computer programmers, technicians and operators, data processors, and marketing representatives.

Additional suggested activities:
-Make a mock-up of a computer.-Visit Burroughs, A.T.& T. in Wayne.-Trip to U. of P. computer.
-Visits from men and women in computer field.

Evaluation

1. Identify the major components of the computer.
2. Name 3 modes on input, 3 of output and 3 forms of storage.
3. Name the steps in simple programming.
4. Name 3 computer languages and their specialized uses. Indicate the language in most common use.
5. What is meant by the 1st, 2nd, and 3rd generation of computers?
6. List the ways that you are aware of that computers affect you in your daily life.
7. Name the concerns of those who fear the effects of computers on our society. How would you respond to those concerns?
8. If you were purchasing a home computer, which would you select and why?
9. Name five careers in the computer field and define.
10. Identify or define 10 of the following:

a. Charles Babbage	g. CRT
b. computer program	h. algorithm
c. computer software	i. chip
d. RAM	j. BASIC
e. ROM	k. GIGO
f. floppy disk	l. input
m. interface	

(B) Applications Design for "Using References in the Library: A History Lesson" (TRS-80; Jr. Hi)

The attached paper is a list of the program, "Using References in the Library: A History Lesson" printed by the Radio Shack TRS-80 printer. This is an applications design for the use of a micro-computer in the library as an aid to teaching which references are most helpful for finding information about famous people in American history.

This program was designed to be used as one of several learning stations for library instruction. As it is unlikely at this stage of educational technology that we would have 25 computers in the library, or 25 of any learning device with accompanying programs (except for pencil and paper) we need to devise a variety of learning situations that can be used by students on a rotating basis. For example, other stations that might be operating simultaneously are sound/filmstrips about the Dewey Decimal System, the card catalog, encyclopedias. used by an individual or small groups. We might use any of a wide variety of library instruction puzzles, or a self-teaching device which requires a pin to be inserted into the correct slot for removal of a card. Small groups can use some of the library instruction games such as, "Cool Chicken" and "Touchdown". Other individuals could view one of several slide/tape presentations that introduce the library with its varied resources or go into depth about the reference section. Another type of activity is a discovery, wherein students are given a group of numbers and have to find the proper shelves and list one title for each number.

Although this type of discussion is outside the scope of the assigned project, I have discussed it here so that we can answer the problem of access to hardware. The immediate reaction to my field-testing experience, from several observers, was, "It's a nice , expensive toy". This one program is not intended to do the whole job of library instruction. It is one of many. It can grow.

It has been my observation in working with Junior High School students that the more different kinds of activities they have, the higher is their interest and the better

their behavior. During the development of this program, I used two test groups. One group listened to me lecture then completed a worksheet of questions identical to those in the program. The other group had no special instruction but used the computer which was located in the reference section. Each group required almost an entire class period of 45 minutes to complete the exercise. All students in the lecture group were able to work at the same time; however there was much sharing of answers. In the computer group two students worked together and shared the on-line experience and the leg-work of finding the reference books and looking up the answer. Stations were set up so that everyone had something to do. Of course the computer was a novelty and everyone sneaked a peek from time to time. The lecture group did more griping about the work. It appears that the computer group's sub-groups will have finished everything but this lesson before each group has a chance at the computer.

This brings up the necessity for close cooperation between teacher and librarian. The teacher I worked with is very cooperative and will send students to the library to finish the lessons. This will not work in every situation. The curriculum as developed by this particular teacher is very flexible and lends itself well to this type of library instruction.

Following completion of the program, I questioned the students about their experience. They enjoyed the lesson. They quickly learned to look carefully for the proper title to match the call number (given) and to look at the entire set to see if there was an index to use. They learned about the existence of one volume of a multi-volume set and thereby acquired an awareness of reference sources which we hope was tucked away for the future. They learned that "920" means Biography and that "973" means U.S.History without an involved lecture on the Dewey Decimal System. They much preferred this exercise to an earlier lesson where they watched a filmstrip about reference books.

Thus far I have discussed only the library instruction application of the program. Another facet, and an equally important one, is awareness of computers and their place in

daily life. In this course we have addressed ourselves to the issue of computer literacy. Communication is certainly part of the information function of a library, school or public, and computers are a very important part of the communication package. Whether or not the student is aware of the existance of computers, how they operate and to what uses they can be put is as important as the practicality and effectiveness of computers for teaching library skills.

This experience has demonstrated that using the computer in the library is effective and stimulating. At this stage it is not practical. If practicality is the only criterion, we would have to drop the idea. But when we examine the total experience, we must believe that the computer in the school library is an idea whose time has come.

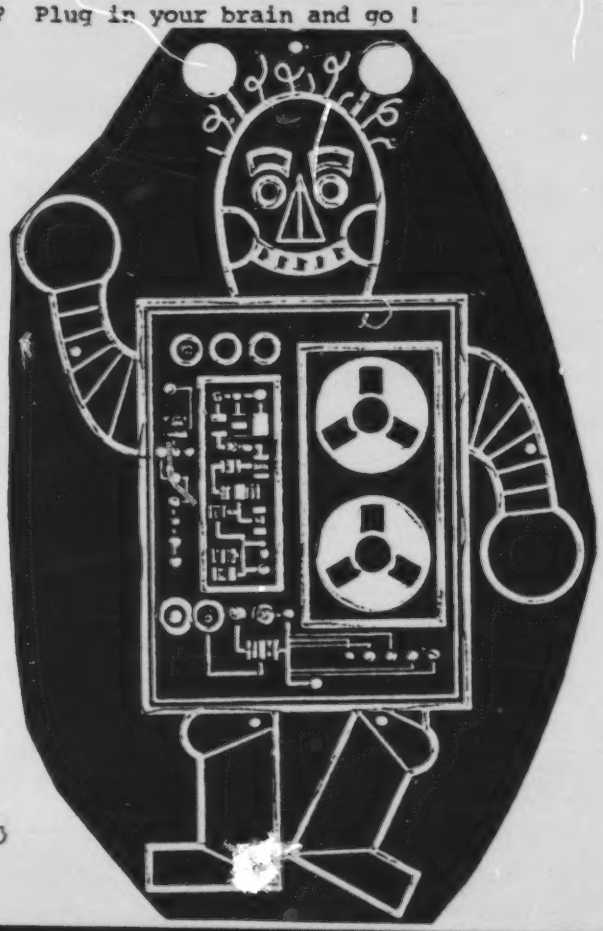
USING REFERENCES IN THE LIBRARY:

A HISTORY LESSON

There are ten questions in this lesson. Each question has three answer choices. After you have typed in "entered" your responce you will be shown the correct answer as well as an explanation of all three choices. Take your time reading the question and the responses. The computer has been programed to allow enough time for you to read and think.

Part 2 of each question requires you to leave the computer and go to the Reference shelves, take the book from the shelf and look up the answer. You will then return to the computer and type in (enter) the number of the page on which you found the answer.

Remember that you control the computer. Whenever you have typed a response, push the white key marked "enter". At the completion of the lesson your score will appear on the screen. Write it opposite your name on the paper in this folder. Ready ? Plug in your brain and go !



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```
1 REM  tHE TOPIC OF MY PROJECT IS 'USING REFERENCES IN THE
2 REM  LIBRARY: A HISTORY LESSON'.  IT WILL INCLUDE A PRO-
3 REM  GRAM FOR LEARNING WHICH REFERENCES ARE APPROPRIATE
4 REM  FOR FINDING INFORMATION ABOUT FAMOUS`PEOPLE IN
5 REM  AMERICAN HISTORY.  THE PURPOSE OF THE PROJECT IS
6 REM  TO FAMILIARIZE 7TH GRADE STUDENTS WITH THE WORKING
7 REM  OF A MICRO-COMPUTER, AND TO TEST WHETHER OR NOT
8 REM  THE C.A.I. IS PRACTICAL AND EFFECTIVE FOR TEACHING
9 REM  LIBRARY SKILLS.
10 CLS
11 N=0:Q=0
12 PRINT"PLEASE TYPE IN YOUR FIRST NAME";:INPUT Z$:CLS
15 PRINT:PRINT:PRINTTAB(3);CHR$(23)"THIS LESSON WILL HELP YOU TO"
20 PRINT"LEARN WHICH REFERENCES ARE MOST"
25 PRINT"HELPFUL FOR FINDING INFORMATION"
30 PRINT"ABOUT FAMOUS PEOPLE IN AMERICAN"
35 PRINT"HISTORY."
40 PRINT:PRINTTAB(3);"THERE ARE 10 QUESTIONS IN"
45 PRINT"THIS LESSON.  EACH QUESTION HAS"
50 PRINT"3 ANSWER CHOICES.  AFTER YOUR"
55 PRINT"RESPONSE, YOU WILL BE SHOWN THE"
60 PRINT"CORRECT ANSWER, AND AN EXPLANA-"
65 PRINT"TION."
70 FOR X=1 TO 8000:NEXT X
100 CLS:PRINTTAB(22);"WELCOME TO THE LIBRARY"
101 PRINTTAB(22);"------- -- --- -------"
105 PRINT:PRINTTAB(8);"USING REFERENCES IN THE LIBRARY: A HISTORY PROJECT"
107 FOR X=1 TO 500:NEXT X
110 PRINT:PRINT"QUESTION ONE: IF YOU WANTED TO FIND WHEN WILLIAM BRADFORD WAS"
115 PRINT"BORN, WHERE WOULD YOU LOOK  (1. CONCISE DICTIONARY OF NATIONAL
BIOGRAPHY,  2. CURRENT BIOGRAPHY,  OR 3. CONTEMPORARY AUTHORS)
ENTER NUMBER";:INPUT A:PRINT
117 IF A<>1 THEN 130
120 IF A=1 THENPRINT"GOOD, "Z$", IF YOU LOOKED IN THE CONCISE DICTIONARY OF NATI
ON-
AL BIOGRAPHY, YOU WOULD HAVE FOUND THAT WILLIAM BRADFORD WAS
GOVERNOR OF MASSACHUSETTS IN 1621, AND SERVED (ALL BUT 5 YEARS)
UNTIL HIS DEATH IN 1657."
121 N=N+1:Q=Q+1
125 PRINT:PRINTTAB(3);"CURRENT BIOGRAPHY IS USED FOR INFORMATION ON PEOPLE WHO A
RE
FAMOUS NOW.  CONTEMPORARY AUTHORS IS USED FOR AUTHORS.":GOTO 210
130 PRINT"NO, "Z$", THE CONCISE DICTIONARY OF NATIONAL BIOGRAPHY IS THE
ANSWER.  THERE YOU WOULD FIND THAT WILLIAM BRADFORD WAS GOVERNOROF MASSACHUSETTS
 FROM 1621 TO 1657 (WITH THE EXCEPTION OF ABOUT FIVE YEARS).":N=N+1:GOTO 125
210 FOR X=1 TO 8000:NEXT X
211 CLS:PRINT:PRINT"THE CALL #  FOR THE CONCISE DICTIONARY OF NATIONAL BIOGRAPHY
IS:                              R
                              B  920
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                                COO"
220 PRINT:PRINT"ON WHAT PAGE DO YOU FIND THE INFORMATION ABOUT WILLIAM BRADFORD"
;:INPUT B
225 IF B<>135 THENPRINT"LOOK AGAIN !!":N=N+1:GOTO 220
230 PRINT"THAT'S IT, "Z$" !!  NOW LET'S TRY ANOTHER...":N=N+1:Q=Q+1
307 FOR X=1 TO 500:NEXT X
310 PRINT"QUESTION TWO: THE BEST ARTICLE, INCLUDING PICTURES OF CHRIS-
TOPHER COLUMBUS  VOYAGES IS FOUND IN  (1. AMERICAN HISTORY TOLD BY CONTEMPORARIE
S  2. MAKERS OF AMERICA  OR 3. GREAT AGE OF EX- PLORATION)";:INPUT A:PRINT
315 PRINT
319 IF A<>3 THEN 330
320 IF A=3 THENPRINT"GOOD, "Z$", THE GREAT AGE OF EXPLORATION CONTAINS A LONG AR
-
TICLE, WITH MANY PICTURES AND ILLUSTRATIONS ABOUT COLUMBUS' FOURVOYAGES TO AMERI
CA."
321 N=N+1:Q=Q+1
325 PRINT:PRINTTAB(3);"AMERICAN HISTORY TOLD BY CONTEMPORARIES HAS NO ILLUSTRA-
TIONS, AND MAKERS OF AMERICA BEGINS WITH THE FIRST COLONISTS.":GOTO 410
330 PRINT"NO, "Z$", GREAT AGE OF EXPLORATION IS THE CORRECT ANSWER.  IN
IT, YOU WILL FIND A LONG ARTICLE CONTAINING MANY ILLUSTRATIONS.":N=N+1:GOTO 325
410 FOR X=1 TO 8000:NEXT X
411 CLS:PRINT:PRINT"THE CALL #  FOR GREAT AGE OF EXPLORATION IS:
        5
                                R-
                               910
                               GRO"
420 PRINT:PRINT"ON WHAT PAGE DOES THE ARTICLE ABOUT COLUMBUS BEGIN";:INPUT B
425 IF B<>79 THENPRINT"LOOK AGAIN, "Z$", YOUR ANSWER IS NOT RIGHT.":N=N+1
430 PRINT"THAT'S IT !!  NUMBER THREE IS COMING NEXT...":N=N+1:Q=Q+1
507 FOR X=1 TO 500:NEXT X
510 PRINT:PRINT"QUESTION THREE: A BIOGRAPHICAL ACCOUNT OF INDIAN LEADER
PONTIAC, WHICH STRESSES HIS MILITARY ACCOMPLISHMENTS IS FOUND IN(1. WEBSTER'S AM
ERICAN MILITARY BIOGRAPHIES  2. INTERNATIONAL
"
515 PRINT"WHO'S WHO - 1974  OR 3. CONCISE DICTIONARY OF NATIONAL
BIOGRAPHY, PART I)  ENTER NUMBER";:INPUTA:PRINT
519 IF A<>1 THEN 530
520 IF A=1 THENPRINT"GOOD, "Z$", IF YOU LOOKED IN WEBSTER'S AMERICAN MILITARY
BIOGRAPHIES, YOU WOULD HAVE FOUND OUT THAT HE LIVED BETWEEN 1720AND 1769, AND TH
AT HE WAS A GREAT OTTAWA CHIEF."
521 N=N+1:Q=Q+1
525 PRINT:PRINTTAB(3);"THE INTERNATIONAL WHO'S WHO WAS PUBLISHED IN 1974, PONTIA
C
LIVED BETWEEN 1720 AND 1769.  THE CONCISE DICTIONARY OF NATIONALBIOGRAPHY INCLUD
ES ONLY BRITISH SUBJECTS.":GOTO 610
530 PRINT"NO, "Z$", THE WEBSTER'S AMERICAN MILITARY BIOGRAPHIES IS THE
CORRECT ANSWER.  THERE YOU WOULD HAVE FOUND THAT PONTIAC LIVED
BETWEEN 1720 AND 1769, AND WAS A GREAT OTTAWA INDIAN CHIEF AND
WARRIOR.":N=N+1:GOTO 525
610 FOR X=1 TO 8000:NEXT X
611 CLS:PRINT:PRINT"THE CALL #  FOR WEBSTER'S AMERICAN MMLITARY BIOGRAPHIES IS:
                                R
                               920
                               WEB"
620 PRINT:PRINT"ON WHAT PAGE IS PONTIAC'S BIOGRAPHY FOUND";:INPUT B
625 IF B<>326 THENPRINT"YOU'VE GOT THE WRONG PAGE, LOOK AGAIN !!":N=N+1:GOTO 620
630 PRINT"THAT'S IT, "Z$"!!  GOOD.  NOW HERE'S ANOTHER QUESTION...":N=N+1:Q=Q+1
707 FOR X=1 TO 500:NEXT X
710 PRINT:PRINT"QUESTION FOUR: IN WHICH OF THE FOLLOWING SOURCES WOULD YOU BE
ABLE TO FIND INFORMATION IN LIST FORM ABOUT GEORGE WASHINGTON
(1. FOUNDERS OF FREEDOM: SIGNERS OF THE CONSTITUTION  2. AMERI-
"
```

```
715 PRINT"CAN HISTORY TOLD BY CONTEMPORaRIES  OR 3. FACTS ABOUT THE
PRESIDENTS)  ENTER NUMBER";:INPUT A:PRINT
719 IF A<>3 THEN 730
720 IF A=3 THENPRINT"GOOD, "Z$", IF YOU CHECKED FACTS ABOUT THE PRESIDENTS, YOU
WOULD FIND LISTS OF FACTS ABOUT ALL OF OUR PRESIDENTS, THEIR
LIVES, THEIR FAMILIES, AND THEIR TERMS AS PRESIDENT."
721 N=N+1:Q=Q+1
725 PRINT:PRINTTAB(3);"GEORGE WASHINGTON WAS NOT A SIGNER OF THE CONSTITUTION, A
ND
AMERICAN HISTORY TOLD BY CONTEMPORARIES HAS HIS SPEECHES AND
WRITINGS, BUT NOT FACTS ABOUT HIS LIFE.":GOTO 810
730 PRINT"NO, "Z$", FACTS ABOUT THE PRESIDENTS HAS MANY LISTS OF FACTS
DEALING WITH EACH PRESIDENT'S LIFE, HIS FAMILY, AND HIS TERM IN
OFFICE.":N=N+1:GOTO 725
810 FOR X=1 TO 3000:NEXT X
811 CLS:PRINT:PRINT"THE CALL #  FOR FACTS ABOUT THE PRESIDENTS IS:
                                R
                               920
                               KAN"
820 PRINT:PRINT"ON WHAT PAGE DOES THE INFORMATION ABOUT GEORGE WASHINGTON
BEGIN";:INPUT B
825 IF B<>3 THENPRINT"NO,`"Z$", THAT'S NOT RIGHT.  LOOK AGAIN !!":N=N+1:GOTO 725
830 PRINT"YOU GOT IT, "Z$" !!  READY FOR NUMBER FIVE...":N=N+1:Q=Q+1
907 FOR X=1 TO 500:NEXT X
910 PRINT:PRINT"QUESTION FIVE:  A MAP SHOWING THE PENNSYLVANIA 'WALKING PUR-
CHASE' OF WILLIAM PENN IS FOUND IN  (1. HAMMOND'S AMBASSADOR AT- LAS  2. ATLAS O
F WORLD HISTORY  OR 3. AMERICAN HERITAGE PIC-
TORIAL ATLAS) ENTER NUMBER";:INPUT A
915 PRINT
919 IF A<>3 THEN 930
920 IF A=3 THENPRINT"GOOD, "Z$".  IF YOU LOOKED IN THE AMERICAN HERITAGE PICTORI
AL
ATLAS, YOU WOULD FIND THAT PENN'S 'WALKERS' ACTUALLY RAN !"
921 N=N+1:Q=Q+1
925 PRINT:PRINTTAB(3);"BOTH THE HAMMOND'S AMBASSADOR ATLAS AND THE ATLAS OF WORL
D
HISTORY ARE WORLD-WIDE IN SCOPE.":GOTO 1010
930 PRINT"NO, "Z$", THE AMERICAN HERITAGE PICTORIAL ATLAS IS THE CORRECT
SOURCE TO USE.  THERE YOW WOULD FIND, NOT ONLY THE MAP, BUT THAT THE 'WALKERS' A
CTUALLY RAN !":N=N+1:GOTO 920
1010 FOR X=1 TO 3000:NEXT X
1011 CLS:PRINT:PRINT"THE CALL #  FOR THE AMERICAN HERITAGE PICTORIAL ATLAS IS:
                                R
                              911.73                                    AME"
1020 PRINT:PRINT"ON WHAT PAGE WOULD YOU FIND THE MAP SHOWING THE WALKING PUR-
CHASE";:INPUT B
1025 IF B<>47 THENPRINT"THAT'S NOT IT, "Z$" !!  LOOK AGAIN.":N=N+1:GOTO 1020
1030 PRINT"RIGHT !!  NOW ON TO NUMBER SIX, "Z$"...":N=N+1:Q=Q+1
1107 FOR X=1 TO 500:NEXT X
1110 PRINT:PRINT"QUESTION SIX: A DISCUSSION OF COTTON MATHER AS AN AUTHOR AND A
PERSON, INCLUDING A LIST OF HIS PRINCIPAL WORKS IS FOUND IN  (1. BRITISH AUTHORS
 TO 1900  2. AMERICAN AUTHORS 16[illegible]-1900  OR 3."
1115 PRINT"MAKERS OF AMERICA)  ENTER NUMBER";:INPUT A:PRINT
1119 IF A<>2 THEN 1130
1120 IF A=2 THENPRINT"RIGHT !  IF YOU LOOKED IN AMERICAN AUTHORS 1600-1900, YOU
WOULD FIND THAT MATHER WAS AN AUTHOR, AS WELL AS A PURITAN THEO- LOGIAN, WHO LIV
ED FROM 1662 TO 1727 IN MASSACHUSETTS."
1121 N=N+1:Q=Q+1
1125 PRINT:PRINTTAB(3);"BRITISH AUTHORS INCLUDES ONLY BRITISH AUTHORS.  MAKERS
 OF
AMERICA IS ONLY A COLLECTION OF DOCUMENTS ABOUT IMMIGRANTS.":GOTO 1210
```

```
1130 PRINT"INCORRECT, "Z$".  THE ANSWER IS AMERICAN AUTHORS 1600-1900.
THERE YOU WOULD FIND THAT COTTON MATHER WAS A THEOLOGIAN, AS
WELL AS AN AUTHOR, WHO LIVED IN MASSACHUSETTS, FROM 1662 TO
1727.":N=N+1:GOTO 1125
1210 FOR X=1 TO 8000:NEXT X
1211 CLS:PRINT:PRINT"THE CALL #  OF AMERICAN AUTHORS 1600-1900 IS:
                                 R
                               920.03
                                 KU"
1220 PRINT:PRINT"ON WHICH PUSRGE WOULD YOU FIND THE BEGINNING OF THE ARTICLE ON
COTTON MATHER";:INPUT B
1225 IF B<>514 THENPRINT"NO, "Z$", THAT'S NOT IT.  TRY AGAIN.":N=N+1:GOTO 1220
1230 PRINT"YOU'VE GOT IT, "Z$" !!  NOW ON TO THE NEXT QUESTION...":N=N+1:Q=Q+1
1307 FOR X=1 TO 500:NEXT X
1310 PRINT:PRINT"QUESTION SEVEN: A LIST OF NICKNAMES GIVEN TO BENJAMIN FRANKLIN
IS FOUND IN  (1. MC GRAW-HILL ENCYCLOPEDIA OF WORLD BIOGRAPHY
2. AMERYCAN HISTORY TOLD BY CONTEMPORARIES  OR 3. AMERICAN NICK- NAMES)  ENTER N
UMBER.";:INPUT A
1315 PRINT
1317 IF A<>3 THEN 1330
1320 IF A=3 THENPRINT"RIHHT !  IF YOU CHECKED THE ARTICLE, YOU WOULD FIND OUT TH
AT
'POOR RICHARD' WAS ONE OF FRANKLIN'S MANY NICKNAMES."
1321 N=N+1:Q=Q+1
1325 PRINT:PRINTTAB(3);"THE MC GRAW-HILL ENCYCLOPEDIA OF WORLD BIOGRAPHY TELLS M
UCH
ABOUT FRANKLIN'S LIFE, BUT MENTIONS ONLY ONE NICKNAME.  IN
AMERICAN HISTORY TOLD BY CONTEMPORARIES, YOU WILL FIND A COL-"
1327 PRINT"LECTION OF ESSAYS AND DOCUMENTS, SOME OF WHICH ARE WRITTEN BY
FRANKLIN.":GOTO 1410
1330 PRINT"COME ON NOW, "Z$".  YOU'RE PULLING MY WIRES !!!  THE CORRECT
ANSWER IS AMERICAN NICKNAMES.  THERE YOU WOULD FIND THAT ONE OF
HIS NICKNAMES WAS 'POOR RICHARD'.":N=N+1:GOTO 1325
1410 FOR X=1 TO 8000:NEXT X
1411 CLS:PRINT:PRINT"THE CALL #  FOR AMERICAN NICKNAMES IS:
                                 R
                               929.4
                                 SHA"
1420 PRINT:PRINT"ON WHAT PAGE WOULD YOU FIND THE BEGINNING OF THE LIST OF NICK-
NAMES FOR BENJAMIN FRANKLIN";:INPUT B
1425 IF B<>159 THENPRINT"LOOK AGAIN, "Z$".":N=N+1:GOTO 1420
1430 PRINT"GOOD, "Z$" !!  NOW LET'S TRY ANOTHER...":N=N+1:Q=Q+1
1507 FOR X=1 TO 500:NEXT X
1510 PRINT:PRINT"QUESTION EIGHT: A PICTURE OF THE HOME OF NEW ENGLAND'S FIRST
POET, ANNE BRADSTREET, IS FOUND IN  (1. ALBUM OF AMERICAN HIS-
TORY  2. GREAT HISTORIC PLACES  3. MILESTONES TO AMERICAN LIBER- TY)  ENTER NUMB
ER";:INPUT A:PRINT
1519 IF A<>1 THEN 1530
1520 IF A=1 THENPRINT"RIGHT, "Z$".  THERE YOU WOULD FIND THAT ANNE BRADSTREET WA
S THE
WIFE OF GOVERNOR SIMON BRADSTREET, OF MASSACHUSETTS."
1521 N=N+1:Q=Q+1
1525 PRINT:PRINTTAB(3);"GREAT HISTORIC PLACES CONTAINS ONLY THE BEST KNOWN PLACE
S.
MILESTONES TO AMERICAN LIBERTY IS A COLLECTION OF DOCUMENTS.
(REMEMBER, YOU MIGHT HAVE TO USE THE INDEX !)":GOTO 1610
1530 PRINT"NO, ALBUM OF AMERICAN HISTORY IS THE CORRECT ANSWER.  THERE
YOU WOULD FIND THAT ANNE BRADSTREET WAS THE WIFE OF THE GOVERNOR OF MASSACHUSETT
S, SIMON BRADSTREET.":N=N+1:GOTO 1525
```

```
1610 FOR X=1 TO 3000:NEXT X
1611 CLS:PRINT:PRINT"THE CALL #  OF ALBUM OF AMERICAN HISTORY IS:
                                  R
                                 973
                                 ADA"
1620 PRINT:PRINT"ON WHAT PAGE DO YOU FIND THE PICTURE OF ANNE BRADSTREEET'S
OUSE";:INPUT B
1625 IF B<>135 THENPRINT"CHECK THAT PAGE NUMBER AGAIN, "Z$" !!":N=N+1:GOTO 1620
1630 PRINT"THAT'S RIGHT, "Z$".  NOW ON TO NUMBER NINE...":N=N+1:Q=Q+1
1707 FOR X=1 TO 500:NEXT X
1710 PRINT:PRINT"QUESTION NINE: AN ACCOUNT OF THE SECOND MASSACRE AT MATANZAS,
ED BY THE FOUNDER OF ST. AUGUSTINE, FLORIDA, IS FOUND IN  (1.
NCYCLOPEDIA OF DISCOVERY AND EXPLORATION  2. MAKERS OF AMERICA"
1715 PRINT"3. WEBSTER'S BIOGRAPHICAL DICTIONARY)  ENTER NUMBER";:INPUT A:PRINT
1719 IF A<>2 THEN 1730
1720 IF A=2 THENPRINT"THAT'S IT, "Z$".  THERE YOU WILL FIND AN ARTICLE WRITTEN B
Y
GONZALO SOLIS DE MERAS ABOUT THE MASSACRE."
1721 N=N+1:Q=Q+1
1725 PRINT:PRINTTAB(3);"THE VOLUME OF DISCOVERY AND EXPLORATION COVERS AN EARLIE
R
TIME PERIOD, AND WEBSTER'S BIOGRAPHICAL DICTIONARY CONTAINS ONLY BRIEF BIOGRAPHI
ES.":GOTO 1810
1730 PRINT"NO, "Z$".  THE ANSWER IS MAKERS OF AMERICA, WHERE YOU WILL FIND
AN ACCOUNT OF THE MASSACRE, WRITTEN BY GONZALO SOLIS DE MERAS.":N=N+1:GOTO 1725
1810 FOR X=1 TO 3000:NEXT X
1811 CLS:PRINT:PRINT"THE CALL #  OF MAKERS OF AMERICA IS:
                                  R
                                 917.3
                                 MAK"
1820 PRINT:PRINT"ON WHAT PAGE DOES THIS ACCOUNT OF THE MASSACRE AT MATANZAS BEGI
N";:INPUT B
1825 IF B<>9 THENPRINT"LOOK AGAIN, "Z$".  THAT'S NOT RIGHT !!":N=N+1:GOTO 1820
1830 PRINT"GOOD, "Z$" !!  HERE'S THE LAST QUESTION -- I BET YOU WERE
WONDERING WHEN YOU'D GET THERE, WEREN'T YOU ?":N=N+1:Q=Q+1
1907 FOR X=1 TO 1000:NEXT X
1910 PRINT:PRINT"QUESTION TEN: THE GERMANTOWN MENNONITES MADE THE EARLIEST PRO-
TEST AGAINST SLAVERY IN THE AMERICAN COLONIES.  THIS IS FOUND IN  (1. DOCUMENTS
OF AMERICAN HISTORY  2. MAKERS OF AMERICA  OR"
1915 PRINT"3. RECORD OF AMERICA)  ENTER NUMBER";:INPUT A:PRINT
1919 IF A<>1 THEN  1930
1920 IF A=1 THENPRINT"THAT'S RIGHT, "Z$".  THERE YOU WILL LEARN ABOUT SOME OF TH
E
MENNONITE BELIEFS.":N=N+1:Q=Q+1
1925 PRINT:PRINTTAB(3);"MAKERS OF AMERICA DOES NOT INCLUDE THAT DOCUMENT.  RECOR
D
OF AMERICA GIVES FACTS, BUT NOT THE ACTUAL DOCUMENT.":GOTO 2010
1930 PRINT"THAT'S NOT RIGHT, "Z$".  THE RIGHT SOURCE IS DOCUMENTS OF
AMERICAN HISTORY.  THERE YOU WILL FIND A COLLECTION OF IMPORTANT DOCUMENTS FROM
THE PRIVILEGES GRANTED TO COLUMBUS TO 1966.":N=N+1:GOTO 1925
2010 FOR X=1 TO 3000:NEXT X
2011 CLS:PRINT:PRINT"THE CALL #  FOR DOCUMENTS OF AMERICAN HISTORY IS:
                                  R
                                 973
                                 COM"
2020 PRINT:PRINT"ON WHAT PAGE WOULD THE BEGINNING OF THE DOCUMENT DEALING WITH
THE MENNONITE PROTESTS AGAINST SLAVERY BEGIN";:INPUT B
2025 IF B<>37 THENPRINT"WRONG PAGE NUMBER.  TRY AGAIN, "Z$"!!":N=N+1:GOTO 2020
2030 PRINT"THAT'S RIGHT, "Z$" !!  YOU HAVE NOW COMPLETED THIS LESSON...":N=N+1:
```

```
Q=Q+1
2050 FOR X=1 TO 500:NEXT X
2060 CLS:PRINT:PRINT:PRINT
2070 PRINT:PRINTCHR$(23) Z$",
OUT OF ";N;" QUESTIONS, YOU
HAVE ANSWERED ";Q;" CORRECTLY.
YOUR AVERAGE IS";(Q/N)*100;"%"
2075 END
```

(C) Design for Micro-computer Inventory of Media - AV Equipment in a Junior High School

Since the microcomputer stands ready to serve us in so many ways, it makes sense to take advantage of this capability whenever possible. As the A-V co-ordinator for the Upper Merion Junior High School, I plan to use it to inventory all media equipment in the building. In addition, I would like to list periods of time out of service, during repair, as well as bulbs needed, where applicable. TRS-80 computers are presently located only in the senior high school and several elementary schools in the district. Although my own building does not yet have one, other than the one brought in weekly by the Intermediate Unit for the enrichment classes, I am hopeful that my program can be used as a selling point for having one in my library. I had planned to use the one purchased for the senior high school library this year, but discovered that students use it continually, and that I couldn't spare much time away from my own area.

At the present time, information for all equipment is not complete: some is on inventory catalog cards, some is on lists, and some is not accounted for. Tom Barringer, a senior high school computer student, has developed a program, using the information I asked him to include. I plan to complete inventory cards for all equipment, so that enrichment students can use them as data cards for entering the information into the computer for me, and recording the data onto a cassette.

Since many teachers have equipment issued on a long-term or yearly basis, I would like to have a print-out by room, so that end-of-the-year check-in procedure could be facilitated. Also, if feasible, repair records could be entered monthly.

On the following pages I will be listing a sample inventory card and describing the fields and their lengths, the types and amounts of the various equipment to be included in the data base, and the computer program to be used.

A-V EQUIPMENT INVENTORY CARD

		(Estimated Field Length)
Type of Equipment:	Film Projector, 16mm	(30)
Manufacturer:	Singer	(15)
Serial Number:	84747	(10)
Model Number:	Instaload 2170	(20)
District Number:	JH 1605	(8)
Date of Purchase:	4/24/80	(8)
Vendor:	Visual Sound	(20)
Price:	$662.00	(10)
Purchase Order Number:	48868	(7)
ESEA Title:	IV-B	(10)
Projection Lamp:	EJL	(10)
Substitute Lamp:	not known	(10)
Exciter Lamp:	BSW	(5)
Original Building Number:	AV-25	(5)
Library Classification Number:	MP16/25	(9)
Room Number - Date Sent Out:	9/15/80	(8)
Room Number - Date Returned:		(8)
Repair History - Date Sent Out:		(8) (8) (8)
Repair History - Date Returned:		(8) (8) (8)
Discard Date:		(8)

Explanation:

District Number: Each piece of equipment has a metal plate attached , with a building code number assigned: JH- Junior High,R- Roberts, etc.

Original Building Number: Many older pieces of equipment lack a district number, and had sequential numbers in white paint: the first record player was AV-1, the first cassette player was AV-1, etc.

Library Classification Number: Each piece of equipment will be assigned an abbreviated code and number: Film(movie) projector, 16mm - MP16/ , Overhead projector, OHP/ , etc.

See list on next page.

TYPES OF EQUIPMENT IN JUNIOR HIGH SCHOOL

Quantity	Equipment	Library Classification Code
5	Battery Charger	BC/
5	Camera	CAM/
30	Cassette Player	CP/
20	Cassette Recorder	CR/
10	Film Projector, 8mm	MP 8/
30	Film Projector, 16mm	MP 16/
10	Filmloop Projector	FLP/
30	Filmstrip Previewer	FSPV/
20	Filmstrip Projector	FSP/
5	Filmstrip Record Player	FSRP/
50	Headset	JHS/
20	Listening Center	LC/
5	Microfiche Reader	MFC/
5	Microfilm Reader	MFL/
5	Opaque Projector	OPQ/
80	Overhead Projector	OHP/
30	Projector Cart, 3-shelf	PJC3/
40	Projector Cart, 2-shelf	PJC2/
30	Record Player	RP/
10	Reel-to-reel tape recorder	RTR/
5	Screen, Portable	SCR/
10	Slide Projector	SLP/
10	Slide Viewer	SLV/
20	Sound Filmstrip Previewer	SFSPV/
10	Sound Filmstrip Projector	SFSP/
5	Tutorette	TT/
500		

COMPUTER PROGRAM

```
1Ø REM ON ERROR GOTO 99ØØ
2Ø CLS:PRINT"SEARCH BY:":FOR X=1 TO 9:READ A$:PRINT X,A$:NEXT
3Ø INPUT"ENTER THE NUMBER":SC:IF SC <>INT(SC)OR SC <1 OR SC>9 THEN 3Ø ELSE RESTORE:
   FOR X=1 TO SC:READ SC$:NEXT:DATA TYPE;MANUFACTURER,SERIAL NUMBER,MODEL NUMBER,
   DISTRICT NUMBER,DATE OF PURCHASE,VENDOR,PRICE,PURCHASE ORDER NUMBER,ESEA TITLE,
   PROJECTION LAMP,SUBSTITUTE LAMP,EXCITER LAMP,ORIGINAL BUILDING NUMBER,LIBRARY
   CLASSIFICATION NUMBER,ROOM NUMBER DATE SENT OUT,ROOM NUMBER DATE RETURNED,REPAIR
   HISTORY DATE SENT OUT,REPAIR HISTORY DATE RETURNED,DISCARD DATE
4Ø PRINT "ENTER THE "SC$;:INPUT S$:(FOR Y=1 TO 1ØØØ:[FOR X=1 TO 9:READ M$(X):NEXT X:]
   IF M$(SC)=S$ THEN [FOR Z=1 TO 9:GO SUB 9ØØØ:PRINT M$(Z):NEXT Z:]PRINT "WHEN READY TO
   CONTINUE,TYPE 'CONT' AND HIT 'ENTER'-":STOP
45 NEXT Y)
5Ø GOTO 2Ø
9ØØØ REM PRINT HEADINGS
9Ø1Ø ON Z GOTO 9Ø2Ø,9Ø3Ø,9Ø4Ø,9Ø5Ø,9Ø6Ø,9Ø7Ø,9Ø8Ø,9Ø9Ø,91ØØ,911Ø,912Ø,913Ø,914Ø,915Ø,
     916Ø,917Ø,918Ø,919Ø,92ØØ,921Ø
9Ø15 PRINT "ERROR":STOP
9Ø2Ø PRINT "DATA TYPE:"::RETURN
9Ø3Ø PRINT "MANUFACTURER:"::RETURN
9Ø4Ø PRINT "SERIAL NUMBER:"::RETURN
9Ø5Ø PRINT "MODEL NUMBER:"::RETURN
9Ø6Ø PRINT "DISTRICT NUMBER:"::RETURN
9Ø7Ø PRINT "DATE OF PURCHASE:"::RETURN
9Ø8Ø PRINT "VENDOR:"::RETURN
9Ø9Ø PRINT "PRICE:"::RETURN
91ØØ PRINT "PURCHASE ORDER NUMBER:"::RETURN
911Ø PRINT "ESEA TITLE:"::RETURN
912Ø PRINT "PROJECTION LAMP:"::RETURN
913Ø PRINT "SUBSTITUTE LAMP:"::RETURN
914Ø PRINT "EXCITER LAMP:"::RETURN
915Ø PRINT "ORIGINAL BUILDING NUMBER:"::RETURN
916Ø PRINT "LIBRARY CLASSIFICATION NUMBER:"::RETURN
917Ø PRINT "ROOM NUMBER DATE SENT OUT:":: RETURN
918Ø PRINT "ROOM NUMBER DATE RETURNED:":: RETURN
919Ø PRINT "REPAIR HISTORY DATE SENT OUT:"::RETURN
92ØØ PRINT "REPAIR HISTORY DATE RETURNED:"::RETURN
921Ø PRINT "DISCARD DATE:"::RETURN
```

```
9900 IF ERR-6 THEN RESTORE:FOR T=1 TO 9:READ T$:NEXT TO RE-UN-DATA-IZE LINE 30:
     T$="":TO DEFAULT LINE 40 Y=1000:RESUME ELSE PRINT "ERROR IN LINE"
     ERL:PRINT ERR,2+1:STOP
9999END:REM DATA STARTS HERE
10000 REM DATA IN SAME ORDER AS IN LINE 30.  EACH PIECE OF DATA SHOULD BE ENCLOSED IN
     QUOTES AND BE SEPARATED BY COMMAS.
10001 REM  ONE LINE OF DATA FOR EACH PIECE OF EQUIPMENT.
START WITH LINE 10010.
```

Size of data base (storage requirement): Since I doubled the original number items planned for this program, I estimate that I can only use it if data is entered every 5 lines, instead of every 10 lines. The other choice would be to divide the equipment into audio and visual and have 2 tapes, but this would make it impossible to obtain an accurate record of long-term teachers' holdings.

Calculations: The capacity of the TRS-80 is 65,535 bytes. Subtracting 10,000 from this leaves 55,535. Each piece of equipment has 20 lines of data, and dividing 55,535 by 20 equals 2,776. If 2,776 is divided by 10, the answer of 277 would mean that only that number of pieces of equipment could have its data entered. Therefore, if only 5 lines were left between data, the capacity of entries would double to 554 pieces of equipment. Actually, however, I probably would have ample room, since my estimated inventory includes provision for much additional equipment. Also, once a piece of equipment has been discarded it no longer needs to be kept in the computer. Another solution would be to eliminate low-cost items like headsets.

Uses of data base:

1. Facilitate end-of-the-year checkout of equipment to be collected from each teacher.
2. Give accurate count of how many of each type of equipment are in building.
3. Track "down time" for repaired equipment, and aid in determining when discard or replacement is indicated.
4. List all bulbs needed, for ordering purposes.
5. Provide a method of orderly depreciation for insurance purposes.
6. Aid in determining which teachers may need additional instruction in proper care and operation of equipment.

Conclusion: I feel that microcomputers are a source of limitless possibilities, with many as yet undiscovered potential uses. I am excited by the challenge, and look on it as another way to further stimulate many of today's unmotivated students. If prices continue to decrease, every home could well have one available in ten years, and our future could be filled with intriguing transformations in our thinking.

(D) Application Design for an Online Search Assistance Program of Junior High Students Using a Local Data Base

One of a school librarian's primary responsibilities is to develop in his students competency in the skill of locating information that will serve their needs. Traditionally, this "training" has consisted of introducing the kinds of resources available in the school or local library, with occasional mention of resources available elsewhere. Little attempt is made to deal with the thought processes that are required to translate the student's initial definition of what he wants into a form that corresponds to an index entry, be it in a card catalog or encyclopedia, or at a, to appearances at least, not-very-browsable computer terminal.

Is it even imaginable that we could automate the librarian's hand-holding and translation of countless "um"s and "the one with the red cover"s and scribbled misspelled names of obscure historical figures copied from a teacher's blackboard? Would it be possible to write a computer program that could help a child learn to express his information needs in a way that would enable the computer to find that information? It would seem that the very requirement of the computer for a clear definition of what is being requested would make it an excellent training device to help the student learn to clarify his own thinking, provided the search program was designed with that objective in mind.

Before we try to design a search program for children, let's take a look at what is being done for adults. At the present time, most online searching, even for professional information users, is being conducted by "search professionals". Many of

those "search professionals" cannot imagine that an untrained user could ever take over the terminal, and in the present state of online search languages, it would indeed be difficult. Every search service has its own command set, every database its own vocabulary. However, there is no reason to assume that this situation will remain static, as Meadow (9) points out in an analogy with the broadening base of computer programmers, who have needed less and less mathematical ability as ever higher-level programming languages were developed. Bell and Jones (3) support Meadow's perspective by pointing out that as online systems are introduced into the home via a combination of telephone and television set, such systems will have to be searchable in everyday language.

Efforts are being made in a number of different directions to design online search programs that are both more effective in finding the information the user wants and easier and less time-consuming (and less resource-consuming) to use. The use of clustered files, and the weighting of search terms either by a relevance measure or by frequency of appearance in a document are efforts to produce the best set of documents to match the searcher's initial request, but they do assume initial search terms that are well suited to the vocabulary of the database, and to come up with such good terms requires the familiarity with that vocabulary that only an experienced searcher would have. (See Refs. 4, 6, 7, 13). Furthermore, they attempt to quantify subject access to documents, the "exploitative" aspect of bibliographic control which, unlike the descriptive aspect, is not completely controllable according to the laws of cybernetics as explored by Wellisch (16).

At the other end of the spectrum are those researchers who are abandoning thesauri and controlled vocabularies in favor of "natural language" queries by means of techniques such as word stemming (11) and "affix stripping" (3), the latter being done on a minicomputer with as little as 12K core and a 2.3 meg disc.

Various efforts have been made to overcome the problem of multiple database vocabularies and make several databases accessible simultaneously to professional and academic users who are not, however, professional searchers. One such effort, VSS (11), may also help the user come up with better initial search terms, but it is only feasible on a large mainframe because of the complex file structure required. Ol'Sam, currently being developed at the Franklin Institute by David Tolliver, uses a microcomputer to provide two users simultaneous access to several commercial databases, using a common vocabulary and a common command set. Ol'Sam (14) will also monitor the user's syntax and search strategy and provide "help" frames. This type of system could be applicable in a school setting to make general magazine and newspaper indexes, available through a communications hookup, more accessible to younger students.

Ol'Sam, as well as Meadow's IIDA (10) and SERIDU, a beautifully simple command language developed at the Free University of Brussels to teach searching to students of information science (15), all use a command language that, however simple, must be learned. In a school setting, and with all the interactive capabilities of BASIC and the response time of a dedicated system, it should be possible to provide a much greater degree of prompting through the use of menu screens than has been employed in any of the

research cited here, with the exception of Oddy's "man-machine dialogue" (12). Oddy's is the only work I have discovered so far which takes into account the fluidity of a search as the "browsing" user comes into contact with references that in turn change the nature of his queries. He quotes "the eminent chemist, Lord Todd," as saying, "We must surely make the maximum use of computers and associated automation, but if we carry it to the point where the scientist no longer browses in the literature without first of all formulating questions then I believe we shall do harm to science." How much more difficult it is for the child, whose context of knowledge is so much less formed, to formulate his search terms in advance!

Oddy's design is disarmingly simple. An initial "natural language" search term produces an output remarkably like the familiar catalog card with tracings at the bottom (only these "tracings" are considerably more numerous). The user examines the output, accepts or rejects it, then enters the numbers of any of the "tracings" he would like to try as further search terms. Alternatively, he can enter a new search term he has made up. A new citation is presented, and the process continues until a certain number of successive "no" responses without additional search terms are entered, at which point the program politely suggests that the user may have exhausted the resources available. Although written for an IBM 360, Oddy's program appears to be applicable to a microcomputer database system.

What might be some basic guidelines for a program to assist junior high students in searching a microcomputer database? First of all, we'll assume that this database includes books and pamphlets, maps, and A-V materials, but not magazines and newspapers, nor the contents of reference books. Becuase it is on a microcomputer, we will probably be somewhat restricted in the degree to which we can freely use natural language, so we will have to provide means of rescuing children from spelling or word-choice errors in those few places where they enter a word at all. It will be most important to have a vast number of index terms, from very specific to very general, for any given document, and it must be easy for the staff to enter a new index term at any time. A monitoring facility for use by librarians and teachers, such as that accompanying the SERIDU system (15), would be very useful, although it would probably require more storage and possibly slow response time. The program should be designed so that the more proficient students can bypass some of the hand-holding. Such students ought to be provided the opportunity to do some Boolean queries, as these are so common in the commercial databases. Lively graphics would help to alleviate the heavily word-oriented nature of this program compared to other instructional programs. Finally, management considerations will present a problem if only one terminal is available, and students will probably have to sign up in advance for terminal sessions.

The following is a sample search sequence:

1) Hi there! I'm Hal, your library catalog machine. I can help you find information in books, maps, filmstrips, records, and tapes.

Remember, you can also go the other catalogs for information in magazine, newspapers, and reference books.
Press Enter to go on to the next page.

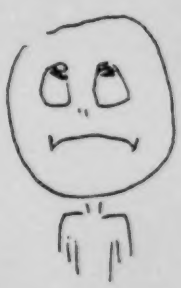
2) Do you know exactly what book or other item you wants?
If so, type its author's last name, and press Enter.
If you don't have one particular book in mind, or you don't know the author, just press Enter.
▶

3) Now, if you know the exact title that you want, type it here, and press Enter. If not, just press Enter.
▶

(At this point, if the author and title, or just the title, is correct, the citation comes back, and the search part of the session terminates.)

Error:

Woops! You must have spelled that author (title) wrong.
Try again. If you still don't get it, we'll just go ahead.
Hang in there!

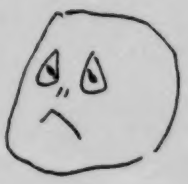


4) If you're still with me, I guess you're looking for information. What topic would you like information about? Type it here and press Enter.

▶

Error:

Woops! I don't have any information on that topic. Are you sure you spelled it right? Please check your spelling and try again.



▶

Error 2:

I still have no information on the topic you entered. Can you say it in any other way?

▶

Error 3:

Still no luck. Here is a list of some other words that begin with the same first three letters as your topic word. Can you use any of these? If you can, type an X beside it and press Enter. If you can't, just press Enter.

(list of words)

Error 4:

Maybe I really don't have anything on exactly your topic. Can you think of a more general topic that would include yours?

▶

(Input will plug in as if it were entered at (4) above)

First hit (>10 citations):

Wow! I have found 465 possible sources of information for you. But that's too many for me to tell you about right now.

Here's a list of subtopics under your headings, "basketball". Type an X beside the one(s) you want.

(list of subtopics)

If none of them fits, type an X beside "Show first ten", and I'll show you the first ten references from my list.

First hit with 10 citations or less:

Good! I have information on your topic. Please type an X next to one or more of the formats below:

___ book or pamphlet
____ filmstrip
____ cassette tape
____ map
____ 16mm movie (you'll need a projector)
____ record

Now press Enter.

Nothing of the format requested:

I'm awfully sorry! I don't have anything on your topic in the format you asked for. Press Enter to get the format screen back.

First hit with requested format:

Now please type the earliest year you will take information from. If it doesn't matter, type four zeros.

▶ _ _ _ _

37

Nothing of the date range requested:

I'm very sorry! I don't have anything that recent on your topic. Press Enter to get the date screen back.

First hit with requested format and date:

I have 4 references for you.

Type SHOW to see them on the screen.

Type PRINT to get a copy on paper.

▶

(But please be nice to your friends, and use PRINT if students are waiting behind you.)

SHOW screen:

Here is the output from your search.

If you still need more information, use the extra terms underneath each reference to get ideas for your next search topic.

(Citations)

(overflow message) When you have finished looking at these references, press Enter to go on to the next page of your list.

PRINT screen:

The output from your search will be coming soon out of the printer.

If you find that you still need more information, use the extra terms underneath each reference to get ideas for your next search topic.

Disclaimer

This is only the very sketchiest of beginnings. I need to know much more about microcomputer database design options; I need to find more literature on experience with searches by untrained users, and I need to record children's manual search efforts systematically.

BIBLIOGRAPHY

1. Bates, Marcia J., "Idea tactics," J. of ASIS 30:280-289, September 1979.

2. Bates, Marcia J., "Information Search tactics", J. of ASIS 30:205-14, July 1979.

3. Bell, Colin and Kevin P. Jones, "Towards everyday language information retrieval systems via minicomputers," J. of ASIS 30:334-339, November 1979.

4. Bichteler, Julie and Edward A. Eaton III, "Comparing two algorithms for document retrieval using citation links", J. of ASIS 28:192-95, July 1977.

5. Buntrock, Robert E., "The effect of the searching environment on search performance", Online, v. 3, no. 4, pp. 10-13, October 1979.

6. Burket, T.G., "The use of vocabulary files for on-line information retrieval", Information Processing and Management 15:281-89, 1979.

7. Croft, W. Bruce, "Using Boolean queries with a clustered file organization," J. of ASIS, 30:358-60, November 1979.

8. Macleod, Ian A., "SEQUEL as a language for document retrieval", J. of ASIS 30:243-249, September 1979.

9. Meadow, Charles T., "Online searching and computer programming: some behavioral similarities (or why end users will eventually take over the terminal)", Online 3:49-52, January 1979.

10. Meadow, Charles T., "The computer as a search intermediary", Online 3:54-59, July 1979.

11. Niehoff, Robert, "Overcoming the database vocabulary barrier--a solution*", Online 3:43-54, October 1979.

12. Oddy, R.N., "Information retrieval through man-machine dialogue", The Journal of Documentation 33:1-14, March 1977.

13. Sparck Jones, K., "Experiments in relevance weighting of search terms", Information Processing and Management 15:133-44, 1979.

14. Tolliver, David, "Online database search assistance machine". One-page introductory brochure by Frankline Institute Research Laboratory, Inc., and personal demonstration.

15. Van Slype, Georges, et al., "A mini-Euronet standard command set at Universite Libre de Bruxelles (ULB)", Online Review 4:41-53, 1980.

16. Wellisch, Hans H., "The cybernetics of bibliographic control: toward a theory of document retrieval systems", J. of ASIS 31:41-50, January 1980.

(E) A Mock Proposal for Incorporating OCLC Services in a Local School District Library

SITE - The North Royalton School District, a medium-sized school system in suburban Philadelphia serving primarily middle and upper-middle class families. Close to 60% of all graduates go on for higher education.

PROPOSAL - To invest $3,000.00 in the Ohio College Library Center network. While all of the network's services would be available to and utilized by the district, North Royalton would take part in a school library acquisition's program funded by the network. OCLC would conduct a study dealing in particular with the North Royalton School District's use of the acquisitions sub-system, a new service offered by the network and still in the experimental stages.

"Cooperation" has always been the motto of the North Royalton school district. Fostered by concerned school board administrators, instilled by dedicated teachers, and supported by involved parents, the cooperative spirit gives a special sense of purpose and pride to every student who shares in our system.

The North Royalton school system now has been presented with yet another opportunity to put into practice the cooperative spirit we so sincerely espouse. Over the past two school years our Parents-Teachers Organization and our Friends of the School Libraries Committee has raised nearly $3,000.00 to be used for improvement and expansion of library services district-wide. The Library Advisory Committee appreciates the hard work and extensive effort which went into raising this sum of money. Further, after extensive study of various options, we feel certain that we have come upon the wisest investment plan for the future of our libraries, our schools and our students.

The Ohio College Library Center (OCLC), a not-for-profit nationwide library network has taken a special interest in our school system. Last March, following extensive consultations with the Library Advisory Committee, the officers of OCLC extended a special invitation to the North Royalton school system to participate in an experimental program designed to monitor computer applications to a school library acquisitions program. The North Royalton school district could become the first school system in the nation to partake in the newest computerized service offered by the OCLC network.

Each of us need look no further than the corner bank or supermarket to see computers at work and to realize the impact that computers will no doubt have on today's young people. Already mini-computers are in use in our school system's math and language programs. By investing in the OCLC computerized network we will present our students with another exposure to computer applications, and hopefully give them more of a head start in preparing for a computerized future.

While $ 3,000.00 would buy many new books for the next several school years, an equal investment in computers will provide a resource which transcends time. Access to a natio-wide data base of six million titles; computerized library services from acquisitions to cataloging to inter-library loan; as well as "hands-on" exposure for students to a computerized system are among the benefits an investment in OCLC will provide for our students - both next year and every year thereafter.

Furthermore, OCLC, through its research and development division, has offered North Royalton a matching grant of $3,000.00. This would thereby double our investment. The members of the Library Advisory Committee urge the board members to carefully consider the proposal to invest in the Ohio College Library Network. We respectfully request that you view the following presentation with an open mind - open to the future of schools and computers.

SLIDE PRESENTATION

SLIDE	DESCRIPTION	NARRATION
1.	One room school house	The educational process in America has always been one of transition
2.	A major university	The "information explosion" has meant higher education for more Americans
3.	One teacher instructing a large class	Similarly, teaching methods have changed with the times
4.	One student - one teacher working with computer	Computers are now utilized in many school settings to facilitate learning
5.	A group of students working with computers	For today's students exposure to computers is an indispensible part of the educational process
6.	North Royalton school board meeting	Our school system has worked diligently to keep abreast of educational innovations
7.	The computer center at the North Royalton district center	Here at North Royalton, the opening of the computer-learning center signalled a proud day for our system
8.	Display of OCLC brochures, manuals, & CRT terminal	Today our school system has an opportunity to take advantage of another computerized educational application
9.	OCLC logo super-imposed on map of the U.S.	The Ohio College Library Center - OCLC - represents a computerized nationwide library network which strives to provide shared library services
10.	Exterior of the OCLC facilities	Located in Columbus Ohio the network is a non-profit corporation which funds research and development within the library field

SLIDE	DESCRIPTION	NARRATION
11.	CRT terminal	The OCLC network is "accessed" or tapped into by means of a cathode ray tube - a CRT terminal
12.	Enlargement of a catalog card	On-line members of the OCLC network are able to produce bibliographical records - catalog cards for all titles processed At the same time, a permanent archival tape of all of the library's holdings is maintained in the data-base
13.	Enlargement of inter-library loan format	Another service provided by OCLC allows libraries to borrow books and media materials from other system members via the computer
14.	Teacher and librarian selecting new books	The OCLC system's newest service enables librarians to order directly from publishers and wholesalers by means of the computer
15.	An OCLC training session	While the computer may appear intimidating to a non-user, the system is easily learned
16.	Lines drawn on U.S. map - indicating the national network	Computerized network services within the library field parallel similar trends in business, industry and higher education
17.	Businessmen working with computers	In banks, department stores and even supermarkets computers are widely used
18.	College students working with computers in science laboratory	Colleges and universities have also made the transition to computerized learning in every field from science to music
19.	North Royalton school official receiving award	Recently, the North Royalton School System was honored for its efforts to implement computer literacy within its schools

SLIDE	DESCRIPTION	NARRATION
20.	North Royalton fund raising event	Raising the money which we hope to invest in OCLC was a cooperative effort - involving the energies of North Royalton students, parents, teachers and administrators
21.	Elementary student working at computer terminal	The Library Advisory Committee of the North Royalton School System sincerely believes that an investment in the OCLC network will be a sound investment in our system's future.

---END---

INVESTING IN OCLC

INITIAL NORTH ROYALTON INVESTMENT - $3,000.00
MATJEIN' OCLC GRANT - $3,000.00
TOTAL - $6,000.00

HIGHLIGHT OF EXPENSES:

OCLC Model 105 Terminal	$3,700.00
Implementation Fee	$ 800.00
AT&T Equipment	$ 148.00
Profile Creation	$ 50.00
Inter-library Loan Fee	$ 50.00
Acquisitions Fee	$ 75.00
	$4,823.00

PER-TITLE EXPENSES:

Cataloging - $1.25
Averaging 750 titles yearly - $937.50
Inter-library loan - $.95
Averaging 100 titles yearly - $ 95.00
TOTAL- $1,032.50

PROJECTED FIRST YEAR EXPENSES:

Hardware - $4,823.00
Process - $1,032.50
TOTAL — $5,855.50

(F) TEACHER'S RESOURCE LIST OF SUPPLEMENTARY MATERIALS FOR COURSES USING MICROCOMPUTERS.

BASICS & BACKGROUND:

Ashley, Ruth. Background Math for a Computer World. John Wiley, 1980. $7.95.

A self- instruction guide.

Ball, Marion J. and Charp, Sylvia. Be a Computer Literate. Creative Computing Press. $3.95.

This informative, full color book is an ideal first introduction to the world of computers. Includes many drawings, diagrams and photos.

Billings, Karen and Moursund, David. Are you computer literate? Dilithium Press, 1979. $8.95

A self-teaching manual for the inexperienced who have no computer equipment.

Osborne, Adam. An Introduction to Microcomputers, Volume 0: The Beginner's Book. Osborne/McGraw-Hill, 1979. $7.95.

Provides instruction on construction, terminology, internal logic and applications of microcomputers.

Osborne, Adam. An Introduction to Microcomputers, Volume 1: Basic Concepts. Osborne/McGraw-Hill, 1980. $12.99.

Describes the logic used by computers, special features of microcomputers and their applications.

Shelly, Gary B. and Cashman, Thomas J. Introduction to Computers and Data Processing. Anaheim Publishing Co. $15.95.

Basic introduction that assumes no previous knowledge of computers. Contains 450 color pictures and diagrams.

PROGRAMMING MANUALS:

Albrecht, Bob, et. al. BASIC for Home Computers: Self-Teaching Guide. John Wiley, 1978. $7.95

A best seller introduction to BASIC programming for microcomputers.

PROGRAMMING MANUALS: (cont)

Alcock, Donald. Illustrating BASIC (A Simple Programming Language). Cambridge University Press. $17.50, $5.95 p.

A basic introduction to BASIC.

Amsbury, Wayne. Structured BASIC and Beyond. Computer Science Press, 1980. $10.95.

An introduction to BASIC with an emphasis on structured programming concepts.

Dwyer & Critchfield. BASIC and the Personal Computer. Creative Computing Press. $12.95.

Explains the writing of programs and expanding the use of a computer by showing the great diversity of applications possible on any microcomputer. One of the most comprehensive presentations of BASIC.

Dwyer and Kaufman. A Guided Tour of Computer Programming in BASIC. Creative Computing Press. $6.15.

Introductory text on BASIC filled with detail and examples. Aimed at the novice, but of value to everyone.

Findlay, W. and Watt, D. Pascal: An Introduction to Methodical Programming. Creative Computing Press, 1978. $12.95.

An introduction to the Pascal language, stressing programming principles, good style and a methodical approach to programming.

Grogoni, Peter. Programming in Pascal. Creative Computing Press. $11.50.

A excellent introduction to one of the fastest growing programming languages today. Contains both examples and exercises to increase reader proficiency in Pascal.

Kemeny and Kurtz. BASIC Programming. Creative Computing Press. $11.95.

An introduction to computer programming through the language of BASIC.

McCracken, Daniel. A Simplified Guide to Fortran Programming. Creative Computing Press. $15.50.

A thorough first text in Fortran. Covers all basic statements and quickly gets into case studies ranging from simple to challenging.

PROGRAMMING MANUALS:(cont.)

McCunn, Donald. Computer Programming for the Complete Idiot. Design Enterprises of San Francisco, 1979. $5.95.

Simplifies programming in BASIC for the microcomputer user.

Osborne, Adam. Some Common BASIC Programs. Creative Computing Press. $7.50.

An ideal workbook to accompany a BASIC programming course. Contains 76 general purpose, practical BASIC programs with complete listings.

PROBLEMS & PRACTICE:

Guido, Raymond. Calculating with BASIC. DaCapo Press, 1981. $8.95.

A compilation of 43 programs in BASIC dealing with math, finance, statistics, mechanical engineering and electronics.

Poole, Lon. Practical BASIC Programs. Osborne/McGraw-Hill, 1980. $15.99.

Includes user documentation for 40 BASIC programs and solves practical problems such as income averaging and checkbook reconcilation.

Poole, Lon and Borchers, Mary. Some Common BASIC Problems. Osborne/McGraw-Hill, 1978. $14.99.

A"cookbook" of 76 easy-to-run general programs for microcomputers; each program includes a verbal description sample run, source listing and options for modifying or adapting the programs.

Rugg, Tom and Feldman, Phil. 32 BASIC Programs for the Apple IIComputer. Dilithium Press, 1981. $1795.

Documents programs for the home computer.

Sage, Ted. Problem Solving with the Computer. Creative Computing Press. $6.95.

Used in conjunction with the traditional high school math curriculum, this book stresses problem analysis in algebra and geometry. Most widely adopted text in computer mathematics.

PROBLEMS & PRACTICE: (cont.)

Sawusch, Mark. 1001 Things to do With Your Personal Computer. TAB Books, 1980. $7.95.

Contains chapters on applications in business, math, science, education, games, etc. The programms all seem to be in Microsoft BASIC, and should be a good source of material.

GAMES:

Ahl, David H. BASIC Computer Games: Microcomputer Edition. Creative Computing Press. $7.50.

102 classic computer games, everyone in standard microcomputer BASIC. Everyone is complete with large legible listing, sample run and descriptive notes.

Ahl, David H. More BASIC Computer Games Workman Press, 1980. $8.95.

Instructions for 84 games in BASIC, complete with program listings and sample runs.

Mateosian, Richard. Inside BASIC Games. Sybex, 1980. $13.95.

Offers instructions on designing and playing educational games(some teach math) as well as games of chance on a home computer in BASIC.

Sage, Ted. Fun & Games With the Computer. Creatice Computing Press. $6.95.

Designed as a text for a one-semester course in computer programming using BASIC language. Programs used are games rather than mathematical algorithms.

Snover, Stephen L. and Spikell, Mark A. Brain Ticklers: Puzzlers and Pastimes for Programmable Calculators and Personal Computers. Prentice Hall/ Spectrum, 1981. $13.95.

Fun and games with 26 puzzles that range in difficulty. Includes cartoons and flow designs.

Spencer, Donald. Game Playing with Computers. Creative Computing Press. $18.30.

Includes 70 games and mathematical recreations to sharpen programming skills through a relaxed and radically different approach.

GAMES: (cont.)

Tracton, Ken. 57 Practical Programs and Games in BASIC. TAB Books, 1978. $7.95.

An interesting collection of programs that will run on any floating-point BASIC. The 57 programs are presented in alphabetical order. Most are short, from 12 to 63 lines long. Each program is neatly presented with an explanation, LIST, flowchart, and RUN. A little heavy on math.

REFERENCE:

Miller, Merl K. and Sippl, Charles J. Home Computers: A Beginner's Glossary and Guide. Dilithium Press, 1978. $8.95.

Background reference for the microcomputer user.

Spencer, Donald D. Computer Dictionary for Everyone. Scribners, 1980. $9.95.

Non-technical explanations of some 2500 computer terms for programmers as well as lay people.

Spencer, Donald D. Microcomputers at a Glance. Camel Publishing Co., 1977. $11.95.

Intended as a basic reference book for all microcomputer users, this dictionary of technical terms contains 25 terms related to microcomputers, along with 36 photographs and diagrams.

Sippl, Charles J. The Essential Computer Dictionary and Speller. Prentice Hall/Spectrum, 1980. $15.95.

More than 10,000 computer terms and acronyms are explained in this illustrated handbook.

Sippl, Charles J. and Kidd, David A. Microcomputer Dictionary and Guide. Dilithium Press. 1975. $24.95.

Offers explanations of products, procedures, systems and techniques.

TEACHER SOURCEBOOKS:

Ahl, David. Computers in Mathematics: A Sourcebook of Ideas. Creative Computing Press. $15.95.

Pragmatic, ready to use, classroom tested ideas presented for everything from the most basic introduction to binary numbers to advanced techniques like multiple regression analysis and differential equations. Every item discussed has a complete explanation including flowcharts, programs, and sample runs.

Doeur, Christine. Microcomputers and the 3 R's, a Guide for Teachers. Hayden Book Co. Inc. 1979.

A valuable resource tool for teachers.

Kurshan, Barbara. Computer Literacy: Practical Ways to Teach the Basic Mathematical Skills. Virginia Council of Teachers of Mathematics, 1978.

Summary of what to do and how to do it in teaching computer literacy for elementary, junior high and high school.

Poirot, James L. Computer Science for the Teacher. Sterling Swift Publishing Co., 1976. $8.95.

The contents have been selected to help classroom teachers. Each topic is presented with a list of student-oriented objectives and suggestions for presentation of the material. Examples and exercise sets(with answers for selected exercises) complement each other and text content. Most chapters include a list of references and suggested sources for additional materials.

Poole, Lon. The Apple II Users Guide. Osborne/McGraw-Hill, 1981. $15.00.

A user's manual for the second largest selling microcomputer, including information on sound and graphics capabilities.

Ricketts, Dick. Course Goals in Computer Education. K-12. Commercial Education Distribution Services, 1979.

Contains goals for use in planning and evaluating elementary and secondary school curricula in computer education including such topics as computer literacy, computer science, computers and society, data processing and computer programming.

MISC. RESOURCES:

Apple Education Foundation - Designed to offer support and resources to organizations and individuals who are pioneering learning methods through the use of microcomputers. Formed by Apple Computer, Inc. Cupertino, California, the foundation will also sponsor the Educational Program Information Center (EPIC) which will support microcomputer users in developing new instructional programs and in obtaining available information on educational materials.

Conduit - A source of information on instructional materials and instructional applications for computers. Jim Johnson and Hal Peters, PO Box 338, Iowa City, Iowa 52240.

PERIODICALS:

Byte - 70 Main Street, Peterborough, NH 03458.
Byte provides a wealth of information with a emphasis on hardware.

The Computing Teacher- Computing Center, E. Oregon State College, LaGrande, OR. 97850
A professional journal designed for educators interested in the instructional use of computers and calculators.

Creative Computing - PO Box 789M, Morristown, NJ 07960.
Regular features include evaulation of materials, new applications of computers, games and several articles which should have value to teachers in lessons preparation. Attractive and readable.

On Computing - McGraw Hill Publication Co., 70 Main Street, Peterborough, NH 03458.

Personal Computing - 1050 Commonwealth Avenue, Boston, MA 02215.

Recreational Computing - People's Computing Company, 1263 El Cammo Real, Box 3, Menlo Park, CA 94025.

AUDIO-VISUAL MATERIALS:

Board Game: Computer Rage, Creative Computing Press. $8.95.

Educational new board game based on a large-scale multi-processing computer system. The object is to move your three programs from input to output. Moves are determined by the roll of three binary dice representing bits in a computer. Hazards include pricrity interrupts, program

AUDIO-VISUAL MATERIALS (cont.)

bugs, decision symbols, power failures and restricted input and output channels. Notes are included for adapting game for school instruction. A perfect introductory tool to binary math and the seemingly-complex computer.

Sound Filmstrips:

Computer Programming (Basic for Microcomputers) 5 color filmstrips, 5 cassettes. Learning Arts, 1979, $ 84.00.

Designed to bridge the computer literacy gap in the classroom. Designed for the beginner in programming at any grade level. Programming techniques are universal to all BASIC dialects, applicable to the TRS- 80, PET, Apple, and to other microcomputers and terminals. Can be used without availability of a computer. Teacher's guide. --1. Getting Started with the Computer - Line numbering, variables, mathematical functions, punctuation marks, commands of PRINT, LET, RUN, and LIST. --2. Mathematical Operations - More sophisticated mathematical operations along with Relational Operators, and Order of operations. Includes READ, DATA, INI. -- 3. Loops and Subroutines - Higher-level commands . Commands: IF-THEN, FOR-NEXT, GO-SUB, RETURN, and GO-IO. --4. Introduction to Original Programming - Inputting words and numbers during the operation of the program. Commands: INPUT, REMARK and STRING functions. --5. Programming Techniques and Flow Charts- Development of flow charts leading to exemplary programs. All prior techniques are utilized and illustrated.

Computer Concepts - 3 color filmstrips, 3 cassettes . Learning Arts, 1979. $96.00.

1. Introduction to Computers : The CPU. Begins with a general introduction to computers, their usage and examines the central processing unit. The components of the CPU are discussed as well as digits, bits, bytes, words. --2. Computers: Peripherals and Programming - Discusses memory types and storage, input and output devices and programming and its languages. --3. Personal Computers: Basic Concepts - Overviews the dynamics of the exciting world of home and personal computers. Shows how the home computer operates, how its functional components work and defines basic computer terminology.

AUDIO- VISUAL MATERIALS:

Sound Filmstrips (cont.)

Computer Series 1: An Introduction to Computers - 5 color filmstrips, 5 cassettes. Guidance Associates, $95.00.

Fingers, sticks, stones and beads have all been used as computing devices. However, as man needed to remember and deal with larger and larger numbers, he invented counters such as the abacus and the adding machine to make arithmetic easier. Today, all areas of business, government, and science are using computers. With them scientists and engineers solve problems otherwise almost impossible to complete. New computer uses generate needs for more and better computers. 1. History of Computing Devices. --2. &3.- Many Uses and Needs for Computers, Parts 1&2.-- 4. Computers Today. --5. Computers and the World of the Future.

Computer Series 2: Introduction to Computer Programming - 6 color filmstrips, 6 cassettes. Guidance Associates, $130.00.

Designing a good program is essential to the successful operation of the computer. This series of filmstrips reviews the history of digital computers and relates historical developments of technological advancements and the increasing need for rapid and accurate computations. The basic elements of digital computers are described. Types of input, the operations center of the computer, and output forms are explained in detail. After study the students will be able to prepare a simple flow diagram and a simple program suitable for computer instruction. 1. History of Digital Computers. --2. Uses of Digital Computers. --3. Parts and Functions of a Digital Computer. --4. Flow Diagramming Introduction. -- 5 &6. Introduction to Programming Parts 1 & 2.

Computer Series 3: The Binary Number System - 4 color filmstrips, 4 cassettes. Guidance Associates, $90.00.

This series introduces the binary number system, describing the base used and the properties of binary numbers. Binary numbers are related to decimal numbers, and the basic operations of addition, subtraction, multiplication and division in the binary number system are described. 1.& 2. Binary Numbers.-- 3. &4. Binary Numbers at Work, Parts 1 & 2.

AUDIO-VISUAL MATERIALS:

Sound Filmstrips (cont.)

Computers and Human Society - 6 color filmstrips, 6 cassettes. Harper& Row, 1977. $149.00.

Describing the Computer Age as a major turning point in cultural evolution, this program provides a framework for assessing the computer's impact. Students receive a clear, simple explanation of the way computers work. Then they visit the startling frontiers of computer research -where machines are beginning to see, to read, to write music, to solve complex problems on their own and learn through experience. Students join in the debate on artificial intelligence and learn how the computer compares with the human brain. 1. The Ultimate Servant?-- 2. The Electronic Brain. --3. The Evolution of Intellignece. -- 4. The Computer Revolution.--5. The Data Explosion and Central Control. --6. Projections for Man and Machine.

BASIC: An Introduction to Computer Programming - 2 colorfimstrips, 2 cassettes. Center for the Humanities, 1980. $159.00. Also available in Sound- Slide Format.

The BASIC language is standard on many of the most widely available mini- and microcomputers. In this entertaining program, students learn the vocabulary of BASIC as they become familiar with simple programming techniques. Frequent pauses are included to allow practice and review as simple commands in BASIC are introduced. The presentation then shows how programs are created, starting with analysis of the problem to be solved and preparation of a step-by-step flow chart and ending with the writing of the program statements in BASIC. Thei program will be equally useful as an introduction for studnets in a normal classroom setting and for those who have ready access to computer terminals.

Computers: From Pebbles to Programs - 3 color filmstrips, 3 cassettes. Center for the Humanities, 1980. $ 199.50.

This program gives studnets a fascinating picture of what computers really are- how they were developed and what they do. It begins by discussing the history of calculating machines, from the abacus to the first modern computer of the 1930's, and goes on to trace the history of computer technology. The program also explains key computer terminology and then discusses the broad variety of computer applications that have evolved over the past thirty years.

AUDIO- VISUAL MATERIALS (cont.)

Courseware:

Programming in Apple Integer BASIC. Hayden Book Co., Inc. $ 39.95.

A self-paced course that teaches beginners to use the Apple Computer. All instruction is contained in a guide and 2 audiotape cassettes of 2 disks, depending on whether the user employes a tape recorder or a disk drive. There are 12 lessons: the first is an introduction to the learning process; the remaining lessons cover a range of BASIC programming concepts, from building a program to the specifics of computer capability. In the final lesson, a practical programming task is defined, analyzed, coded and listed.

Films:

About Computers - 16mm sound, color, 10 mins. Available from International Business Machines Corp., 1979.

This film gives information and entertaining explanation of computers and how they work. Colorful and imaginative, this animated film also discribes uses of the computers in various applications, including the simulation of different solutions to a problem.

Adventures of the Mind - 6 part 16mm film (each segment 15 mins.) color. Produced by International Instructional Television, Cooperative, Inc. Distributed by Indiana University Audio-Visual Center ans on video by CTI, Inc. (1 Skyline Place, Suite 1207, 5202 Leesburg Pike, Falls Church, VA 22041.

This 6 part film series explores the many ways microcomputers can assist individuals to function productively and creatively. The 15 minute segments cover topics such as hardware, and software, the program language,BASIC and applications of microcomputers to such diverse areas as business, special education, life-long learning etc.

Computer Technology--The Endless Revolution - 16mm sound, color, 14 mins. Available from Sperry Univac, 1979.

This film is aimed at the informed layman and introduces the most recent trends in computer technology. We see the latest developments in semi-conductor technology, bubble and cross-tie memory, fiber optics,speech recognition , voice response and numerous others.

AUDIO-VISUAL MATERIALS:

Films (cont.)

Magnetic Bubbles - 16mm, sound, color, 8½mins. Available from Bell Telephone Lab., 1979.

This film tells of the unusual properties of magnetic bubbles. Unlike most other solid state memories used in information processing systems, magnetic bubbles never forget, even when the electricity is turned off. Data is stored in minute bubble-like magnetic domains in a thin film of magnetic materials.

Some Call It Software - 16mm, sound, color, 11 mins. Available form International Business Machines Co., 1972.

Film defines the meaning of "software" one of the terms computer technology has added to our language in recent years. It refers to the programs, flowcharts, and other documents and instructions people must prepare, enabling the computer to perform its task.

(G) Review of Junior High School Books and Materials on Computers (Includes Computer Awareness Course Outline)

Drotar, David L., and Madison, Arnold. Pocket Calculators: How To Use and Enjoy Them. Nashville : Thomas Nelson Inc., Publishers, 1978.

This book contains 12 chapters. It is 144 pages long with illustrations of photographs and drawings.

One of the chapters deals with the use of calculators in school. The concern for many parents was "If these kids are using pocket calculators in school, they'll never learn how to add or subtract. What will they do the day the calculator breaks?"

The key to the entire pro-and-con issue of whether or not calculators are good for you lies in the words "reinforce learning." Don't let your pocket calculator become a needed crutch. Use it only to speed up, simplify, or check your work, never to replace your thinking.

The following chapters list some tricks, puzzles, and games to play with the pocket calculator. Tricks such as: Dwindling Doubles, Sum-Thing, How Old Are You Now?, Masterminds Use 99's, The Old Switcheroo, Square Not?, Roots, Almost, But Not Quite, Once Isn't Enough, and Would You Repeat That? Puzzles such as: Compute-a-Verse, and Calculator Squares. Games such as: Less Than Nothing, More Than Something, Scrazzle, Odd-It-Y, Pokulator, Space Wars, Losing Sight Of Your Goal, Come To Order, Please, and Bingolator.

The success of today's pocket calculator, which has been in existence since the late 1960's, can be attributed to two factors: size and cost.

In the final chapter of this book the future of the pocket calculator is discussed. One of the new developments may be an increased memory so that pocket calculators can be programmed much as computers are today. The authors suggest the possibility of using pocket calculators to store telephone numbers, addresses, and important dates.

Everyone should choose the pocket calculator that best serves his or her intended use. Depending upon the desired functions and features, five different basic types of digital calculators are available:

the four-function calculator
the slide-rule calculator
the scientific calculator
the memory calculator
the business calculator

Some important aspects to consider when buying a calculator: keyboard, and display. The book suggests that the methods of powering the pocket calculator are varied, and should therefore be considered when selecting your particular instrument.

The authors devote two chapters to instructing us in the care, usage, and operation of the pocket calculator. They agree that there is much about the modern pocket calculator that is likely to confuse the uninitiated buyer-owner, and this book has been written to ease the problem. The chapters in this book include:

how to choose the right calculator to buy
how calculators work
and
how to use a calculator in school, in the house, and in sports

Friel, Susan, and Roberts, Nancy. "Computer Literacy Bibliography." Creative Computing, September 1980, pp. 92-97.

I was able to do a search on OCLC on 33 of the books. After one hour on the terminal I was able to find local locations for only 10 of the books.

This particular bibliography lists 57 books divided into four sections:

A. Computer Applications/Societal Issues
B. Programming; Computer Science; What Is a Computer?
C. Teaching Resources
D. Periodicals

Each of the books is given a code:

E - Elementary Grades
J - Junior High School
H - Senior High School
R - Reference

16 books are given (E) codes
17 books are given (J) codes
23 books are given (H) codes
30 books are given (R) codes

Making the trip to the libraries was another story. This material is scarce. Much of what I was able to locate was outdated.

Grimes, Nancy, and Droegemueller, Leo. "Microcomputers in Schools: Computer Awareness." Rosemount, Minnesota.

I received a reply to a letter I sent to Ms. Nancy Grimes. She is the Director of Elementary and Secondary Education in the Independent School District 196 in Rosemount, Minnesota.

In June of 1976 this district began developing a computer awareness program for school students to increase their awareness and understanding of computers.

Four years ago this district developed two programs. These programs are now being distributed by Radio Shack. Part I is an Introduction to BASIC for all students in grades 3,4, and 5. Part II is called BASIC Programming. It is taught to students in grades 6,7, and 8. Business and science programs were developed for the high school.

Each computer awareness lesson includes an overview, a set of objectives, structured notes, a quick quiz with immediate feedback, and hands-on computer activity.

MICROCOMPUTERS IN SCHOOLS: COMPUTER AWARENESS

Nancy Grimes
Lee Droegemueller
Rosemount, Minnesota

Norman Bell
East Lansing, Michigan

OVERVIEW

Three distinct phases of the Rosemount/Apple Valley Computer Awareness Program are: The High School Computer Awareness Project, The Computer Awareness Project for Grades 3-8, and the Business Education Project. Each of these three phases are described with respect to the content and objectives, teaching methods, computer use, and the teacher training program.

PHASE 1: THE HIGH SCHOOL COMPUTER AWARENESS PROJECT

General Goals: This project has as its main focus instruction in the use of the computer with particular interest being placed on the use of a remote, time-sharing facility. The project is aimed at all students, not just those who, having interest in computers, select the computer course.

Content and Objectives: Making it Count, a series of video tapes produced by Boeing Computer Services.

1. Outline the major historical developments that relate to current computer technology and state the impact of each.
2. Identify the major hardware and software components of a computer system and state the functions of each.
3. Identify the input and output devices of a computer and compare them with respect to type and speed.
4. State the basic relationships among software, data and hardware.
5. For each block of a simple flowchart, state the corresponding computer function to be performed.
6. List and define the major steps involved in writing a computer program.
7. State the function of each statement in a simple program in the BASIC language.
8. Name two characteristics that all programming languages have in common, and specify the differences in high-level, low-level, and maching languages.

9. Identify the major impacts and the potential future impacts of computing systems on society.

10. Name and describe at least two specific computer applications in each of the following areas: scientific or engineering, business or commerce, management, education, government.

Teaching Methods: Each lesson is divided into three general areas — overview and objectives, structured notes and quiz. The teacher introduces the lesson using prepared overhead visuals of the overview and objectives while the students follow along on their worksheets. Then the 30-minute video tape is presented, followed by a review presented by the teacher with students completing their structured notes. The session closes with a quiz using an immediate feedback device.

Computer Use: A large computer is used, accessed via terminals.

Teacher Training Program: The materials developed for the course are bound with all visuals completed, thus guiding teachers through review. The video tapes teach the teachers at the same time the students are learning.

PHASE 2: THE COMPUTER AWARENESS PROJECT FOR GRADES 3-8

General Goals: This project is designed to introduce concepts concerning computing to all students starting at the third grade level. As such, the elementary computer concepts are repeatedly taught throughout all levels, with the major emphasis on computer awareness.

Content: The general topic for this course is Introduction to Computing. Two types of computing equipment are the focus: The 10-key, 4-function, hand-held calculator, and the microcomputer. The specific lesson titles are as follows:

Grade 3:
- Introduction to the Calculator
- Errors and How to Correct Them
- Mixed Operations, Decimals
- Constants and Percents
- Using the Caluculator's Memory
- Introduction to the TRS-80
- Introduction to BASIC
- Introduction to the TRS-80 Keyboard

Grade 4:
- Review Lesson 1
- Arithmetic in BASIC
- Developing and Storing Programs
- Branching Statements
- Looping

Grade 5:
- Review Lesson 2
- Graphics on the TRS-80
- The READ-DATA Statement
- Subroutines
- Numeric Arrays

Grade 6: Introduction to the Microcomputer
Programming in BASIC
System and Program Commands
Editing
Introduction to Branching
Introduction to Flowcharting

Grade 7 The BASIC Language Review
Extended Arithmetic Operations
Numbers
Conditional Branching
FOR-NEXT Loops
Subroutines

Grade 8: The BASIC Language Review
Arrays
Nested Loops
READ-DATA Statements
String Variables
Advanced Graphics

Teaching Methods: Again, overhead visuals and handouts are used with the major presentation done by the teacher. Each lesson has an overview, a set of objectives, structured notes, a quick quiz with immediate feedback, and a hands-on computer activity.

Computer Use: Generally the materials were developed for use on a 16K, Level II TRS-80.

Teacher Training Program: In addition to brief in-service sessions, all materials have been designed to be as self-explanatory as possible. Video tapes of a master teacher presenting the material are presently being made available.

PHASE 3: THE BUSINESS EDUCATION PROJECT

General Goals: With this project there is the move toward specialization in computer applications in specific content areas. Fundamental to this project is the equipping of students with the knowledge needed to be able to learn quickly the operation of any microcomputer system which might be available to them in their first job. The project is not designed to produce programmers, rather the intent is to produce individuals able to use "canned" programs, making minor formatting changes as needed.

Content: This course is made up of a set of activities conducted by the business education teacher in conjunction with the Introduction to Accounting course to introduce students to computer applications in a small business setting. For this course a series of problems have been designed, the answers to the problems being available from the use of "canned" computer programs. The general areas of computer use are PAYROLL, GENERAL LEDGER, A/D, A/R, INVENTORY, and CUSTOMER FILES.

Teaching Method: Each week a problem is introduced via video tape to the class. The problems are all drawn from the operation of a ski store. The video tapes show the manager and employees discussing the current situation and end with a request by the manager for information to be supplied by the computer operator (the students). All data are available through the use of "canned" programs.

Computer Use: A 48K, Level II TRS-80 with disks and printer.

Teacher Training Program: Again the major portion of the material produced is in the same format as the previous courses; visuals and handouts. In addition, video tapes are used weekly as are previously prepared computer programs. All materials are designed to be self-explanatory keeping in-service programs to a minimum.

SUMMARY

The three phases of the computer literacy project provide the needed instruction to make students aware of computing. In addition, because of the careful design of the materials, including the materials for teacher support, these three phases of the computer awareness project also cause the teachers to be aware of computing, sometimes only minutes ahead of the students. It appears that this total support system for the teachers has adequately reduced their fears and now many are able to go well beyond the prescribed content, making more and more creative use of computers.

(H) Bibliography of Children's Books on Computers

Baker, Eugene. I Want to Be a Computer Operator; illustrated by Tom Dunnington. Chicago : Childrens Press, 1973. 31 pages illus.; $7.35; Grades K-3.

Describes, simply and briefly, the functions of a computer. Discusses the job and training of a computer operator. Large print and simple vocabulary make it easy reading for young children. Appropriate illustrations appear on every other page throughout the text.

Ball, Marion J. What Is a Computer?; illustrated by Barbara A. Heisler. Houghton Mifflin Modern Mathematics Series, 1972. 92 pages illus.; $7.43; Grades 1-6.

Clearly explains the how and why of computers. Illustrated with enjoyable, cartoon-like characters. Includes an index and a glossary.

Berger, Melvin. Computers; illustrated by Arthur Schaffert. New York : McCann & Geoghegan, Inc., 1972. (The Science is What and Why Books); 43 pages illus.; $4.49; Grades K-3.

Explains clearly and simply the essential facts necessary to introduce a young child to computer processing. Some important current uses of computers are described, such as weather predicting, postal sorting, and traffic control. Many colorful and appropriate illustrations are used to aid children in understanding the text.

Berger, Melvin. Those Amazing Computers! Uses of Modern Thinking Machines; illustrated with photographs. Day, 1973. 189 pages illus.; $5.95; Grades 5-7.

Discusses the basic terminology and principles of computers. Gives accurate information to illustrate the aid the computer is providing in specific areas. Describes not only the good points of the computer, but also explains some of the problems which have occurred. Photographs supplement the text.

Clark, John O. E. Computers at Work; illustrated by Whitecroft Designs. New York : Grosset & Dunlap, 1971. 158 pages illus.; $3.95; Grades 3-6.

Discusses uses of computers in business, industry, medicine, crime control, transportation, and weather forecasting. Colorful illustrations are used to support the text. Includes an index and a list of bibliographical references.

De Rossi, Claude J. Computers : Tools for Today. Chicago : Childrens Press, 1972. 87 pages illus.; $4.75; Grades 4-6.

Gives a brief history of computers and explains what computers are and how they may be put to work. Black and white illustrations help explain the terms used to describe the parts of the computer and the methods required to make computations. Includes an index.

Halacy, D. S. What Makes a Computer Work?; illustrated by Nat Goldstein. Boston : Little, Brown & Company, 1973. (What Makes It Work? Book); 64 pages illus.; $3.95; Grades 2-4.

Provides a clear and precise explanation of computer functions. Outlines the essential mechanisms of computer operations, such as memory, input, output, and control. Gives a brief explanation of the binary system. Black and white drawings supplement the text. Includes a combination index and glossary.

Jones, Weyman. Computer : The Mind Stretcher; illustrated by Nicholas Costantino. Dial Press, 1969. 120 pages illus.; $3.95; Grades 6-7.

Traces the history of computers from the discovery of the abacus to the development of the first electronic computer. Step-by-step diagrams are used to explain binary arithmetic, input and output, programming and processing. Includes a glossary of terms and an index.

Kohn, Bernice. Computers at Your Service; illustrated by Aliki. Englewood Cliffs, N. J. : Prentice-Hall, Inc., 1962. 72 pages illus.; $3.50; Grades 3-5.

Gives the history and working principles of computers. Tells how computers are helping our country's space program, armed forces, and business and industry. Illustrations consist of pen and ink drawings. Includes a glossary.

Lewis, Alfred. The New World of Computers; illustrated with photographs. New York : Dodd, Mead & Company, 1965. 79 pages illus.; $3.50; Grades 4-7.

Explains the basic principles of computer mathematics, engineering, and electronics. Gives examples of computer applications, such as programming a satellite, predicting an election, maintaining and servicing bank accounts, searching literature, and sorting mail. Black and white photographs are used throughout the text. Includes an index.

Lewis, Bruce. Meet the Computer; illustrated by Leonard Kessler. New York : Dodd, Mead & Company, 1977. 47 pages illus.; $5.25; Grades 3-5.

Points out how computers today are part of just about everything we do. Gives an explanation of the number system used by computers. Many scientific and non-scientific applications of computers are described. Pen and ink illustrations are used to supplement the text.

Meadow, Charles T. The Story of Computers; illustrated by Anne Lewis. Harvey House, 1970. 124 pages illus.; $4.50; Grades 5-7.

Uses a variety of analogies to introduce computer concepts. Children with moderate vocabularies should be able to understand the concepts presented. Pertinent and well-designed illustrations are included in the text. Contains a glossary and a bibliography of topics for further reading.

O'Brien, Linda. Computers; illustrated with photographs. New York : Franklin Watts, 1978. (A First Book); 68 pages illus.; $4.90; Grades 4-6.

Tells about the history of computers and gives brief, but clear, descriptions of necessary computer terms, such as CPU, CRT, and RAM. Explains the binary number system and discusses the use of flow charts. States how and where computers are used throughout the community. Black and white photographs appear throughout the text. Includes a glossary and an index.

Rusch, Richard B. Computers : Their History and How They Work; illustrated with photographs and diagrams. New York : Simon & Schuster, 1969. 126 pages illus.; $4.50; Grade 7 and up.

Traces the history of computers from the abacus to the electronic digital computer. Provides clear, precise answers to critical questions concerning computers. Discusses the field of computers and the unlimited career opportunities available. Black and white photographs and diagrams accompany the text. Includes a glossary of terms and an index.

Rusch, Richard B. Man's Marvelous Computer : The Next Quarter Century; illustrated with photographs. New York : Simon & Schuster, 1970. 126 pages illus.; $4.73; Grade 7 and up.

Previews the ways in which the computer will revolutionize the world. Describes the rapid advances being made in computer technology. Some of the psychological, sociological, and economic implications of life in a computerized world are outlined. Black and white photographs help explain the text. Includes an index.

Srivastava, Jane Jonas. Computers; illustrated by James and Ruth McCrea. New York : Thomas Y. Crowell Company, 1972. (Young Math Books); 32 pages illus.; $4.50; Grades 1-4.

Tells what a computer is and how it works by comparing a computer to a five-ring circus. Outlines the basic units which make up all computers and explains special computer language. Discusses flowcharts and gives directions for designing one. Bright and colorful illustrations appear on almost every page.

Steinberg, Fred J. Computers; illustrated with photographs. New York : Franklin Watts, 1969. 89 pages illus.; $2.95; Grades 6-7.

Provides for the upper elementary student an interesting introduction to the field of computers. Discusses computer programming, processing units, the binary number system, and the role of computers in business, government, medicine, police work, and education. Includes photographs of different types of data processing equipment and computer systems. Provides an index.

Treuenfels, Peter. Looking Forward to a Career : Computers, Second Edition; illustrated with photographs. Minneapolis : Dillon Press, Inc., 1975. 81 pages illus.; $6.95; Grade 6 and up.

Explains the kinds of things that can be done with computers and how they are done. Some of the many careers available in the world of computers are mentioned. Black and white photographs accompany the text. Includes an index.

Vorwald, Alan. Computers : From Sand Table to Electronic Brain, 3rd Edition. By Alan Vorwald and Frank Clark; illustrated by Frank Aloise and Richard Jones. New York : McGraw-Hill Book Company, 1970. 192 pages illus.; $4.95; Grades 6-7.

Discusses the history and operation of computers. Emphasizes and illustrates hardware more than software. Simple flow charts and related programming are considered. Contains black and white illustrations. Includes an index.

III. Bibliography of Related Materials for Children on Computers

A. Films

Computer Revolution. BFA, 1968. 16mm film (color); 23 min.; Grade 4 and up.

Discusses present practical uses of computers. Emphasizes the computer's effect on our world today.

Computers and You. Journal, 1972. 16mm film (color); 15 min.; Grade 6 and up.

Introduces computers by telling what they are, what they can do, and how they operate. Shows general purpose computers and explains how information is fed into a computer.

B. Filmstrips

How Computers Work. Encyclopedia Britannica Educational Corp., 1972. 6 filmstrips (color) and 3 phonodiscs : 6 sides, 12 inches, 33rpm. Also available with cassettes. $83.95; Grades 4-6.

Shows the basic elements of the computer, how it works, its history and future.

Contents : The Computer System, 83 frames; Software and Hardware at Work, 64 frames; Number Systems, 51 frames; Programming, 59 frames; Input/Output, 58 frames; The History of the Computer, 54 frames.

Inventions and Technology That Shaped America, Series 3 : World War I to Tomorrow. Learning Corp. of America, 1972. 6 filmstrips (color) and 3 phonodiscs : 6 sides, 12 inches, 33rpm. Also available with cassettes. $74.50; Grades 4-6.

Explores the significance of major inventions and technological developments in the growth of the United States. Describes their historic economic and social impact on American life.

Contents : Efficient America : The Importance of "Know How", 53 frames; Synthetics : Engineering the Molecule, 54 frames; Flight : Overcoming Distance, 56 frames; Radio and Television : The Power of the Airwaves, 60 frames; **The Computer : Man Extends His Brain, 59 frames; Where Will Technology Take Us?, 56 frames.

(1) Reading Software

Selected Microcomputer Software 1980-81 Opportunities for Learning, Inc.

1. Reading Analysis TRS-80 cassette $5.95

   This program uses various formulas to determine the difficulty of reading material. The analysis includes grade level, number of sentences, number of syllables, etc.

2. Reading Comprehension: What's Different? Level: elem. & up

   PET; disk $14.95 and Apple II; disk $14.95

   This contains ten reading comprehension programs which present logical problems requiring the student to select the one word in four, which does not belong with the rest. It builds analytical skills essential for understanding what is read.

3. Analogies APPLE II; cassette $14.95, TRS-80; cassette $14.95

   PET; cassette $14.95

   There are six programs that teach what an analogy is, what the common types are, and practice in handling all types.

4. Word Skills: Prefixes APPLE II Applesoft; disk $14.95

   PET; disk $14.95

   This program is designed to improve vocabulary, reading, and spelling skills. Learn the meaning of prefixes and find the meaning of new words by analyzing prefixes and root.

   Contains five programs from elementary age on up.

Borg-Warner Educational Systems - MicroSystems 80

I was able to obtain this information from Dr. Joseph M. Scandura, President of Instructional Micro Systems, who is the author of the MicroSystem 80 Critical Reading series. It is designed to teach students to use logical rules of inference in understanding written material. Each rule of inference is taught by example; first in the simplest setting and then in gradually more complex contexts.

The initial materials are for developmental use in the third through the sixth grades. They are also effective for remedial use in the junior and senior high school level. The Critical Reading series is designed for use with the APPLE II using disk input.

Creative Computing Software

Reading Comprehension, CS-8201 (20K)

This is a five cassette package which presents a short story with multiple choice questions. The package requires a SOL-20 with a minimum of 32 K of memory and Processor Technology's Extended Cassette BASIC.